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COMMERCIAL FISHERIES REVIEW

A REVIEW OF DEVELOPMENTS AND NEWS OF THE FISHERY INDUSTRIES
PREPARED IN THE BRANCH OF COMMERCIAL FISHERIES

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COMMERCIAL FISHERIES REVIEW

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THE OREGON'S FISHERY EXPLORATIONS IN THE GULF OF MEXICO, 1950

(A Preliminary Report)

By Stewart Springer*

INTRODUCTION

Recognition of the need for more knowledge of the fishery resources of the Gulf of Mexico led to the formation of the Gulf States Marine Fisheries Compact and the development of a program for fishery explorations and research. The U. S. Fish and Wildlife Service is the primary exploratory and research agency for the Gulf States Marine Fisheries Commission.

To conduct the exploratory phases of the program, the M/V Oregon, a conventional steel hull Pacific Coast purse seiner, owned by the Fish and Wildlife Service and operated by the Exploratory Fishing and Gear Development Section of the Branch of Commercial Fisheries, was transferred to the Gulf in January 1950. (Figure 1)

Guided by the recommendations submitted by the Commission, the vessel's initial explorations for tuna, red snapper, and shark were combined with a general reconnaissance of fishing conditions near the continental shelf from Dry Tortugas to the lower coast of Texas. Following these initial explorations, intensive explorations for grooved shrimp were undertaken and are now in progress.

The fisheries of the Gulf of Mexico produce a substantial portion of the fishery products consumed in the United States. With the exception of the red snapper fishery on the Campeche

FIGURE 1 - USFWS OREGON ON AN EXPLORATORY CRUISE IN THE GULF OF MEXICO.

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Banks and near the continental shelf and some hand-line fishing for grouper or bottom fish in scattered localities, the Gulf fisheries are confined to depths of less than 25 fathoms. With the varied fisheries conducted only in a narrow band along the Gulf Coast and only a scattered hand-line fishery elsewhere, it is not surprising that knowledge of the Gulf's offshore marine resources is scanty (see Figure 2, p. 3).

The fish and shellfish of the inshore waters are relatively well known and support a large and varied industry. Important fisheries for menhaden and mullet are carried on exclusively in very shallow water or in protected bays and estuaries while commercial catches of Spanish mackerel, king mackerel, bluefish, pompano, and blue runner are generally made within sight of land. Fishing for some of these species may be expected to remain primarily a shallow-water activity, but production periods are seasonal and the extent of populations in offshore waters is not known.

Along with the technological developments in the freezing and handling of shrimp and the expansion of markets for this product, the composition of the shrimp fishing fleet has changed in recent years. Small boats of very shallow draft still operate in protected waters and rarely move far from the home base, but larger trawlers capable of extended trips into the open Gulf are now numerous, some roving over the entire Gulf in order to work on fishing grounds of maximum productivity throughout the year. The range of the important shrimp fishery in the Gulf at the beginning of 1950 extended outward to depths of 25 fathoms in parts of the north and northwest Gulf. Formerly this fishery was based exclusively on the white shrimp or green-tailed shrimp (Penaeus setiferus), but for several years the industry has made increasing use of the grooved shrimp (Penaeus aztecus) and the spotted or pink-grooved shrimp (Penaeus duorarum).

The fishing information gathered by the Oregon is cumulative and results from a short period of operation are necessarily tentative or refer only to limited areas covered by intensive fishing. Fishing activities of the Oregon are recorded in detail for future analyses. Furthermore, whether the activity is a shrimp-trawl drag, a drift-net set, or an operation of any other type, it is carried out with a view to comparison with another operation. Information on the rate of catch in pounds-per-hour with different kinds of gear in different localities at different seasons is being accumulated and modifications of methods used in fishing or modifications of the gear are tried out as soon as possible. The explorations undertaken follow a comprehensive plan but for more immediate practical results special emphasis has been put on certain phases of the work briefly reported here.

TUNA

Little tuna (Euthynnus alletteratus) were found by the Oregon distributed near the continental shelf from Aransas Pass, Texas, to Tortugas, in the late spring and summer. They were not observed in cruises in the north and northwest Gulf in November and December. Characteristically, the fish were found in scattered schools with only a few showing in each school. In aggregate, the stocks of little tuna in the Gulf appear to be very large but whether they occur regularly in schools compact enough to make purse seining practical remains to be demonstrated. The Service plans to make purse-seine tests for little tuna in the near future.

Other species of tuna are reported in the Gulf from time to time but reports are not frequent and only a few have been substantiated by captures. Three observations of large tuna were made by the Oregon at sufficiently close range to permit field identification. One specimen taken near the mouth of the Mississippi River

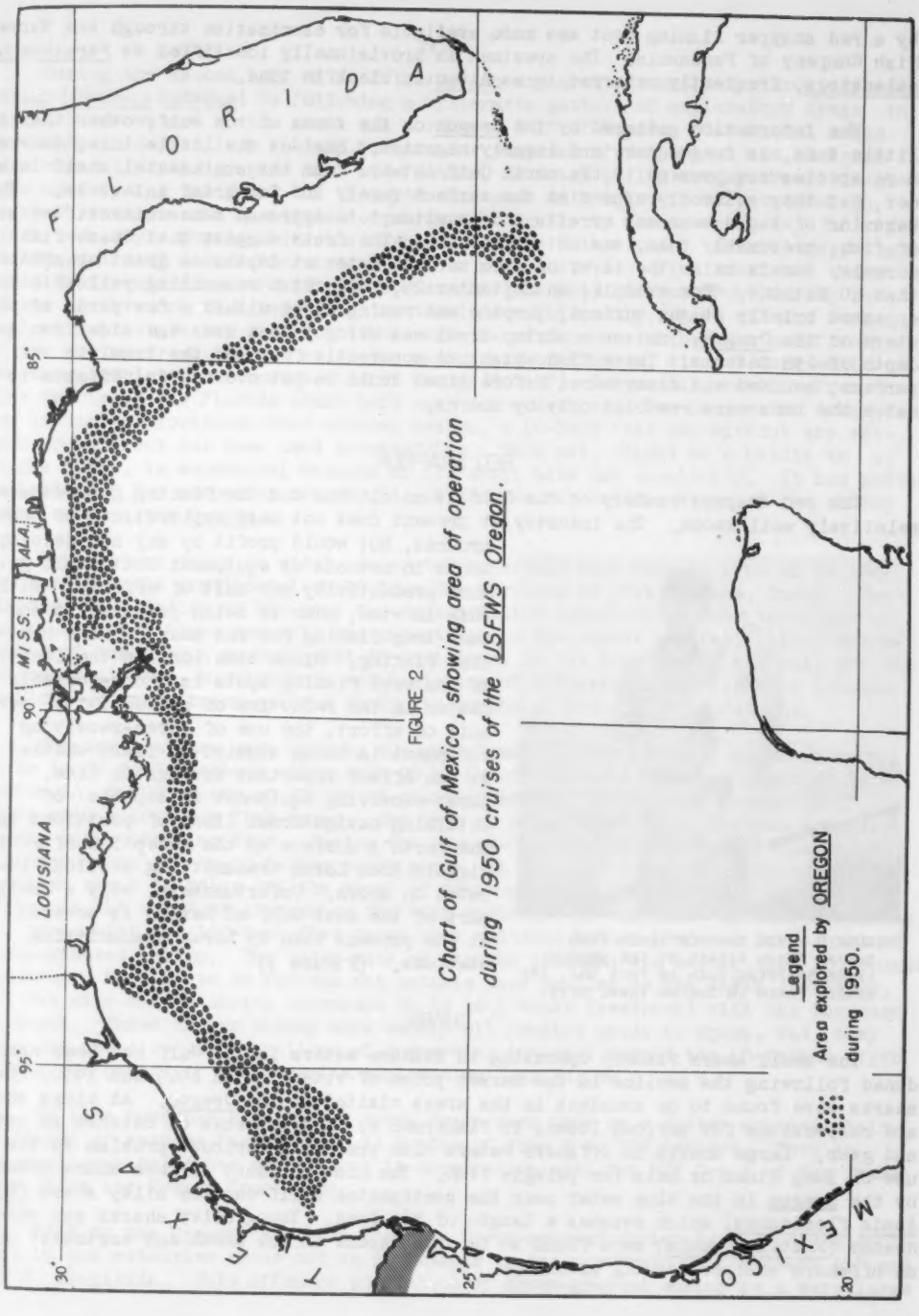


FIGURE 2

Chart of Gulf of Mexico, showing area of operation during 1950 cruises of the USFWS Oregon.

by a red snapper fishing boat was made available for examination through the Warren Fish Company of Pensacola. The specimen is provisionally identified as Parathunnus atlanticus, frequently referred to as Altantic blackfin tuna.

The information gathered by the Oregon on the tunas of the Gulf, other than the little tuna, is fragmentary and largely negative. Besides the little tuna, two or more species are present in the north Gulf outward from the continental shelf in summer, but they evidently appear at the surface rarely and for brief intervals. The behavior of those seen was erratic and an attempt to approach some unidentified school of fish, presumably tuna, was not successful. The facts suggest that these fish normally remain below the layer of warm surface water at depths as great or greater than 40 fathoms. For example, on September 23, 1950, fish resembling yellowfin tuna appeared briefly at the surface, jumping and racing about within a few yards of the stern of the Oregon, just as a shrimp trawl was being pulled over the side from a depth of 258 fathoms. These fish which had apparently followed the trawl to the surface, sounded and disappeared before lines could be put overboard. Efforts to catch the tuna were rewarded only by sharks.

RED SNAPPER

The red snapper fishery of the Gulf is an old one and the fishing grounds are relatively well known. The industry at present does not need explorations of new grounds, but would profit by any new developments in methods or equipment that would give more productivity per unit of effort. With this in view, gear is being prepared to compare trap fishing for red snapper with handline fishing. Since time lost in the location of the best fishing spots is a considerable factor in the reduction of productivity per unit of effort, the use of Loran-receiving equipment is being studied to learn whether it can effect important savings in time. Loran-receiving equipment is capable of obtaining navigational lines of positions in the earth's surface by the reception of radio signals from Loran transmitting stations located on shore. Unfortunately, only a small part of the east Gulf of Mexico is covered at the present time by Loran transmitting stations. (Figure 3)

FIGURE 3 - RED SNAPPER TAKEN FROM SHRIMP TRAWL FISHED BY THE OREGON. LARGE SNAPPERS, SUCH AS THIS ONE, ARE RARELY TAKEN IN SHRIMP TRAWL NETS.

SHARK

The small shark fishery operating in inshore waters in the Gulf has been abandoned following the decline in the market price of vitamin A in 1949 and 1950. Large sharks were found to be abundant in the areas visited by the Oregon. At times sharks are responsible for serious losses to fishermen by their attacks on catches in nets and gear. Large sharks in offshore waters also present a serious problem in the use of long lines or nets for pelagic fish. The most abundant surface shark noted by the Oregon in the blue water near the continental shelf was the silky shark (Eulamia floridanus) which reaches a length of ten feet. Young silky sharks and smooth hounds (Mustelus canis) were found to be troublesome in the north and northwest Gulf on offshore snapper fishing grounds.

SHRIMP

During the second half of 1950 the Oregon explored primarily for brown-grooved shrimp (Penaeus aztecus) by following a systematic pattern of exploratory drags in the offshore waters of the north and northwest Gulf of Mexico. Occasional drags were made in depths less than 25 fathoms for purposes of comparison and 16 drags were made at depths greater than 100 fathoms. A total of 162 shrimp-trawl drags were made during the year. Of these, 50 were made with a 100-foot flat trawl in order to estimate the quantities of shrimp obtainable by commercial gear. This flat trawl is a style popular with the fishermen of the Texas coast. An arbitrary figure of 100 pounds of marketable shrimp per hour with a 100-foot flat trawl has been taken as the minimum catch rate of commercial interest. It was found during the course of the work that larger shrimp trawls conventionally rigged did not work well at depths greater than 60 fathoms and the performance of balloon modifications of the shrimp trawl, rigged as on the east coast of Florida, did not work well on the characteristic soft mud bottom of the west Gulf. Conversely, results from the flat trawls on the Florida coast left much to be desired. For deep-water drags and for initial explorations over unknown bottom, a 40-foot flat net without any set-back or undercut has been used successfully. This net, rigged on a bridle to a single cable, is economical because of its small size and simplicity. It has proven satisfactory for comparing the results of the various modifications of the shrimp trawl used on the Oregon.

Exploratory drags at widely separated intervals were made in from 20 to 100 fathoms near the continental shelf from Dry Tortugas to Port Aransas, Texas. Preliminary work indicated the need for more detailed explorations near the mouth of the Mississippi River and this was undertaken in the summer and fall. The explorations of the Oregon demonstrated the existence in the late summer and fall off the coasts of Alabama, Mississippi, and Louisiana of hitherto unused fishable concentrations of large brown-grooved shrimp in depths of from 30 to 50 fathoms.

The best catches were made by the vessel west of the mouth of the Mississippi River in 32 to 34 fathoms and within 20 miles of the coast. On the night of September 14, 2,700 pounds of 12- to 16-count (heads-on) shrimp were caught in 11 hours with a 100-foot flat trawl. The rate of catch after 9:00 p.m. was approximately 240 pounds per hour. During the August-September operations of the Oregon throughout the 30- to 40-fathom depth range, in the area extending from the 88th meridian about 50 miles off the coast of Alabama to the 90th meridian about 50 miles off the coast of Alabama to the 90th meridian off the coast of east Louisiana, all drags with the 100-foot flat trawl over suitable bottom produced large unmixed brown-grooved shrimp. The catch rate of fishing at night was better than 100 pounds per hour. From 40 to 50 fathoms the catches were smaller as the depth increased, but the size of the shrimp increased to 6½ to 7 count (heads-on) with the increase in depth. These larger shrimp were nearly all females ready to spawn, but they were not found in concentrations of commercial interest beyond the 40-fathom depth during the period of the vessel's exploration (see Figure 4, p. 6).

In late November a series of trawl drags were made on a course approximately southeast of Aransas Pass, Texas, at depths of from 9 to 238 fathoms. Work in the shallower water was carried out in cooperation with the M/V Carey of the Texas Game, Fish and Oyster Commission.

Work by the Oregon has shown that the brown-grooved shrimp is moderately abundant in the extensive areas out to 50 fathoms in the northwest Gulf between 91° and 96° W. longitude. This offshore population of brown-grooved shrimp is a very large

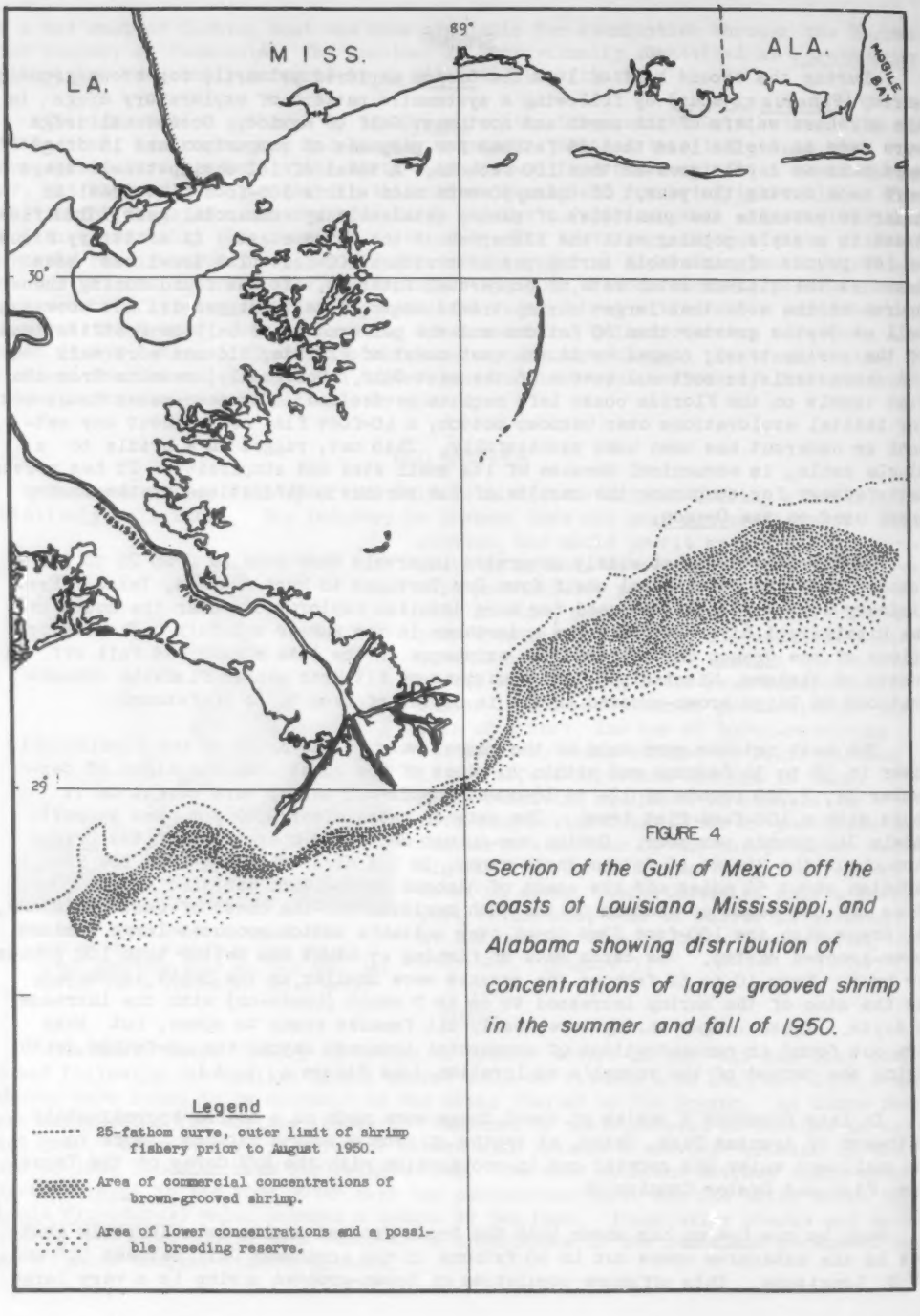


FIGURE 4

Section of the Gulf of Mexico off the coasts of Louisiana, Mississippi, and Alabama showing distribution of concentrations of large grooved shrimp in the summer and fall of 1950.

one. In each of 18 widely-scattered drags made in this area at night between 20 and 55 fathoms, brown-grooved shrimp were taken at rates varying from 5 pounds to 150 pounds per hour. Although work in this area was limited to a few drags and no very extensive concentrations of shrimp were located, it should be noted that the amount of trawlable bottom probably exceeds 5,000 square miles and that all of the sample drags produced some shrimp. This exploration is not yet complete and additional work is planned to cover the rest of the Gulf waters adjacent to the United States and to obtain rough determinations of the seasonal fluctuations in concentrations of brown-grooved shrimp. The pink-grooved shrimp (P. duorarum) was not observed in the Oregon's catches in the north and northwest Gulf outward from depths of 30 fathoms and negligible numbers of white or green-tailed shrimp (P. setiferus) were taken.

FIGURE 5 - READYING A 100-FOOT SHRIMP TRAWL FOR FISHING ABOARD THE OREGON.

A few shrimp trawlers have worked in the deeper waters near the Mississippi River mouth since the fall of 1950. It seems probable, however, that profitable fishing in deeper waters of some areas in northwest Gulf will be dependent on the development of trawling gear better adapted to work in very soft mud. The trial of gear designed for use under these special conditions is planned.

Thirteen drags were made in the north and northwest Gulf in 60 to 160 fathoms. In general, the results at these depths have been poor. Few shrimp, and none of commercial interest, were taken and damage to gear was great, partly because of rough bottom and partly because of excessive loading by heart urchins. Five drags made in 200 to 250 fathoms near the mouth of the Mississippi and southeast of Aransas Pass, Texas, were of interest because catches were not only larger than in the 60- to 150-fathom range but included a much greater variety of forms. One species of shrimp, Hymenopeneus robustus, was taken in sufficient quantity to be of possible commercial interest; for example, a 45-minute drag with a 40-foot trawl produced 60 pounds of 28-count (heads-on) shrimp and 61 pounds of scrap. The largest of these shrimp were about 14 to the pound, heads on, but the lots taken by the Oregon were of mixed sizes averaging about 28 count. They resemble boiled shrimp in color when taken from the water. These shrimp have good flavor and texture but have a lobster-like taste quite different from the shrimp now marketed.

MISCELLANEOUS OBSERVATIONS

Analysis of catches made with shrimp trawls by the Oregon have shown the presence of relatively large stocks of low value but marketable kinds of fish in depths from 25 to 60 fathoms. Among these are butterfish, harvestfish, scup or porgy, and king whiting. Croaker and their allies, the dominant group in less than 25 fathoms, are less frequent in the deeper waters and even in deeper waters average too small to market under present conditions. In three drags made in depths from 60 to 150 fathoms over sand and shell bottom, a few specimens of tilefish and flounder (Paralichthys squamilentus) were taken. Information obtained incidental to further work

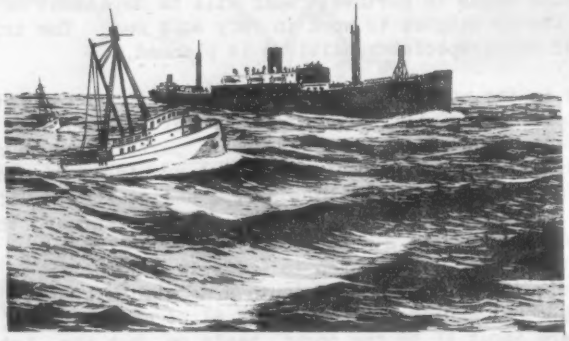
with shrimp trawls will probably provide data on the range of these fish, but trawling with fish trawls will be necessary to learn the possibilities for commercial use of these stocks.

NOTE: A MORE COMPREHENSIVE REPORT OF THE OREGON'S 1950 GULF OF MEXICO FISHERY EXPLORATIONS WILL BE PUBLISHED AT A LATER DATE BY THE SERVICE AS A FISHERY LEAFLET.

"S.S. PACIFIC EXPLORER"

Part IV-Personnel and the Movement of Materials

The tuna in southern Pacific waters are taken chiefly by either of two methods, purse seining or live-bait fishing. Purse seines are huge encircling nets varying from 325 to 425 fathoms in length and 450 to 700 meshes (4½-inch mesh by stretched measure) in depth depending on the size of the vessel. The net is set about a school of tuna and the bottom is closed or "pursed" to surround the fish in a "bowl" of netting. As the seine is hauled aboard, the fish become sufficiently concentrated within a small area to be removed by brailing with power-operated dip nets.



Hook-and-line gear is used in the live-bait method of fishing. A supply of live bait is captured near shore in foreign or domestic waters. After capture, the bait is transported to the fishing grounds where it is thrown overboard in the immediate vicinity of schools of tuna, thereby attracting and exciting them. Simultaneously, either artificial lures or baited hooks, attached to stout bamboo poles by lines and leaders, are thrown overboard by the crewmen working individually or in teams to capture the tuna. The live-bait system of tuna fishing is responsible for the major proportion of the production, but the purse-seine method is becoming of increasing importance.

--Fishery Leaflet 326

THE JOHN N. COBB'S SHELLFISH EXPLORATIONS IN CERTAIN SOUTHEASTERN ALASKAN WATERS, SPRING AND FALL OF 1950

(A Preliminary Report)

By Edward A. Schaefers*

INTRODUCTION

The commercial shellfish potentialities in certain southeastern Alaskan waters were surveyed by the John N. Cobb, an exploratory fishing vessel of the U. S. Fish and Wildlife Service, in the spring and fall of 1950. Special emphasis was placed on shrimp and crab fisheries.

During the spring of 1950 a combined shakedown and shellfish survey cruise was made by the vessel. Because of the limited amount of time between the vessel's commissioning in February 1950 and the start of an extensive offshore exploration for albacore, this first survey was a short one. Actual exploratory work was carried on from March 24 to April 11 in the region near Ketchikan.

A second survey was conducted from October 30 to December 9. These five weeks were spent in the waters adjacent to Baranof and Chichagof Islands.

The cruises were made in the spring and fall because it was believed that the findings might assist in the establishment of "off-season" fisheries in the area; moreover, during these months work in the open ocean by an exploratory vessel tends to be less practicable and productive because of time lost for adverse weather.

This report is presented in two parts. The first part discusses the spring survey trip while the second part discusses the fall operations.

RESULTS OF SPRING OPERATIONS

TYPES OF GEAR: Three types of gear were used in the spring fishing operations—traps, an otter trawl, and a dredge.

The shrimp traps, made up of 1¼-inch stretched-mesh cotton webbing, were cubic in shape with sides 34 inches square, containing 4 cone-shaped entrances (3 inches in diameter) located in the center of each vertical side.

The otter trawl, a small West Coast box-type trawl with a total length of 460 meshes, had wings and body made of 21-thread, 2-inch stretched-mesh cotton webbing, and a cod end of 24-thread, 1½-inch stretched-mesh cotton webbing. The net at the throat was 150 meshes across and had a 75-mesh breast.

The dredge used had a cast-iron frame and was spread with an 8-foot steel-pipe beam. It was similar in most respects to a small Blake deep-sea trawl, the chief difference being the addition of two beams on the outer margin of the U-shaped runners. The extra beams gave additional support to the frame and also served as a place of attachment for the net. The net was a simple bag made of 1½-inch stretched-mesh, 24-thread cotton webbing. Although no sweep ropes were used, the extra beams served in a similar manner.

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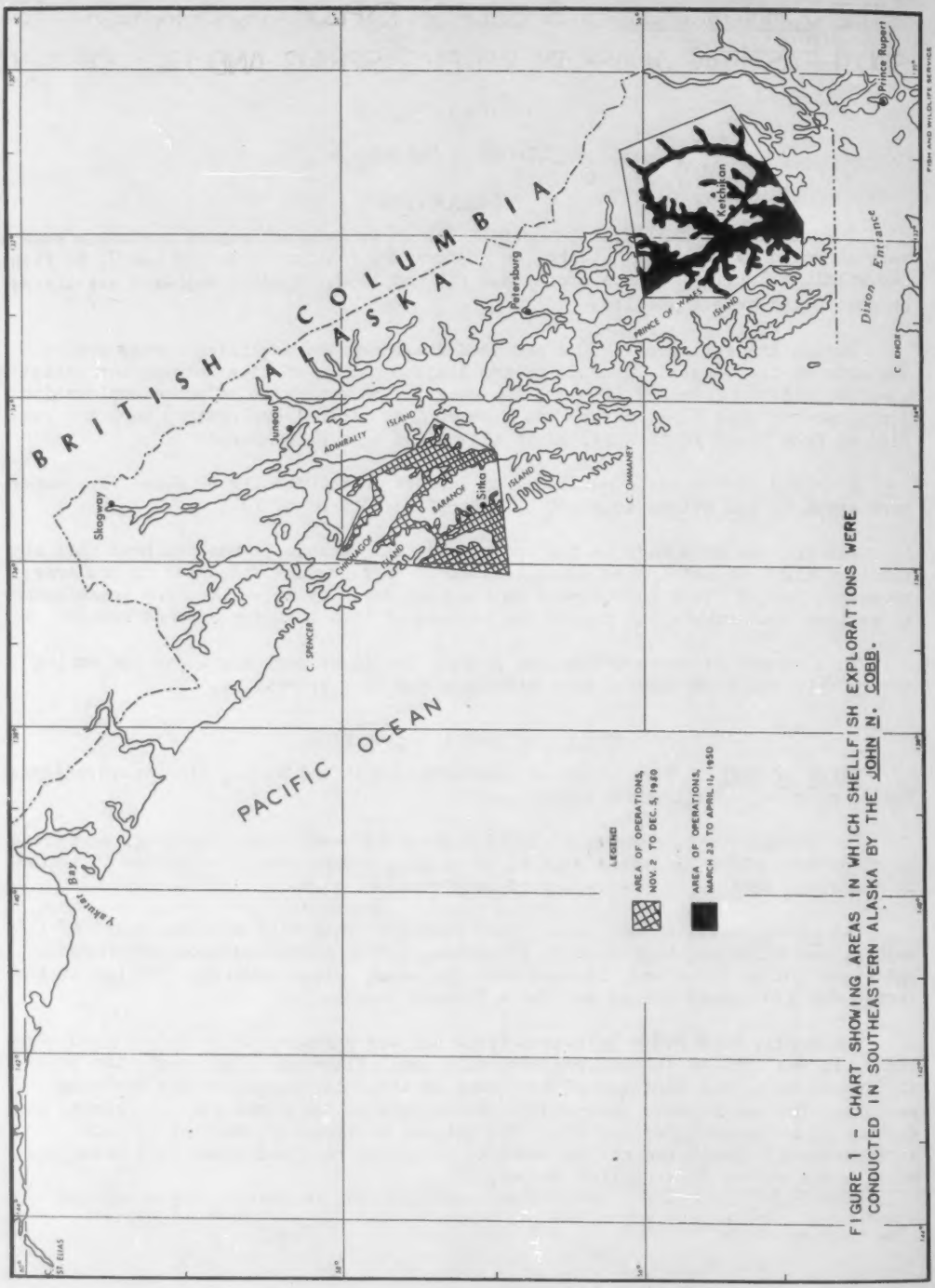

FIGURE 1 - CHART SHOWING AREAS IN WHICH SHELLFISH EXPLORATIONS WERE CONDUCTED IN SOUTHEASTERN ALASKA BY THE JOHN N. COBB.

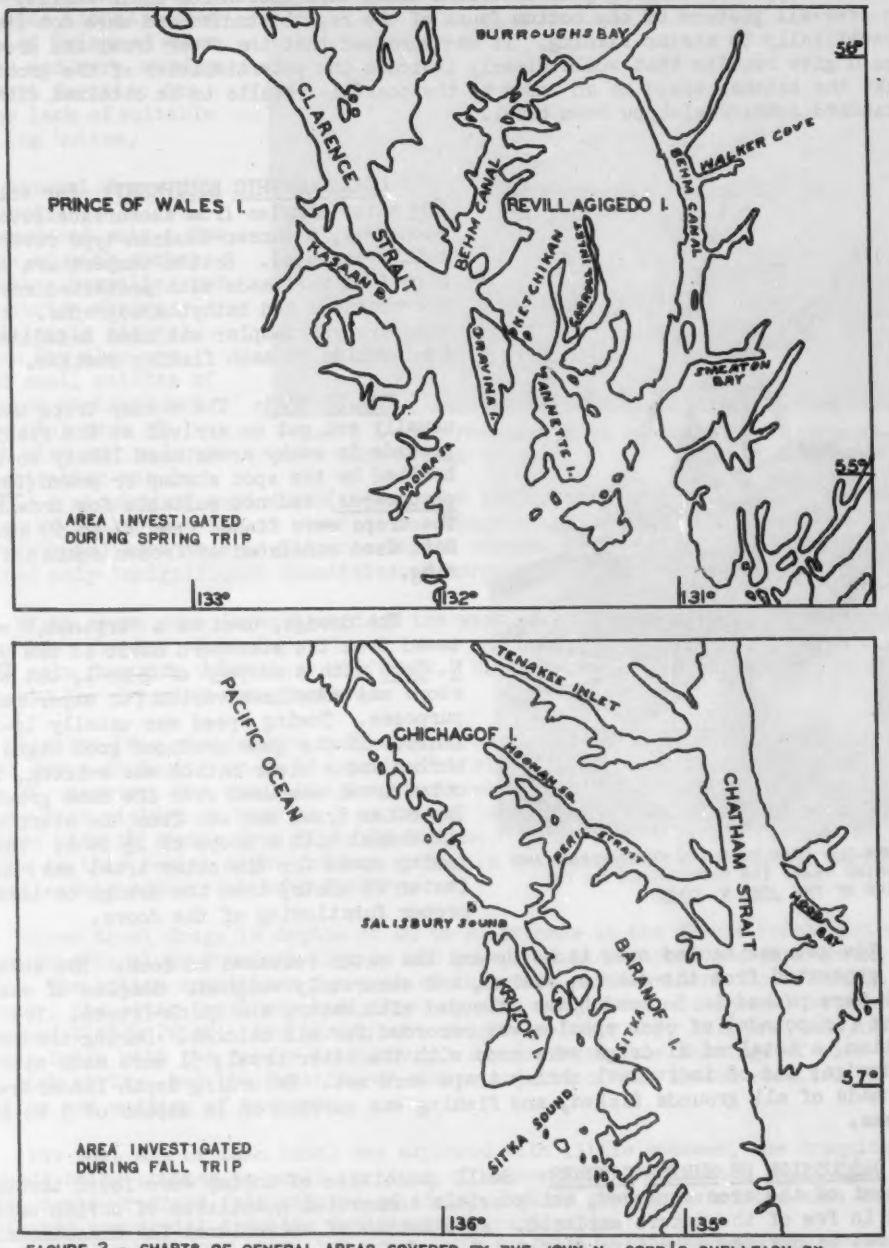

FIGURE 2 - CHARTS OF GENERAL AREAS COVERED BY THE JOHN N. COBB'S SHELLFISH EXPLORATIONS IN THE SPRING AND FALL OF 1950.

The types of fishing gear described above were chosen for their ability to give an over-all picture of the bottom fauna of the region studied and were not limited specifically to shrimp fishing. It was surmised that the otter trawl and dredge would give results that would clearly indicate the potentialities of the grounds and that the catches would be an index to the possible results to be obtained with a standard commercial-type beam trawl.

FIGURE 3 - CRAB POTS (IN FOREGROUND) AND SHRIMP TRAPS (IN BACKGROUND) ON THE DECK OF THE JOHN N. COBB.

OCEANOGRAPHIC EQUIPMENT: For collecting water samples from subsurface levels in each area, a Nansen-Knudsen-type reversing bottle was used. Bottom-temperature determinations were made with protected reversing thermometers and bathythermographs. A snapper-type sampler was used to collect bottom samples at each fishing station.

USE OF GEAR: The shrimp traps were usually set out on arrival at the fishing grounds in rocky areas most likely to be inhabited by the spot shrimp or prawn (Pandalus platyceros) and not suitable for trawling. The traps were fished from 12 to 50 hours. Bait used consisted of frozen squid and herring.

The dredge, used as a "try-net," was towed from the starboard davit of the John N. Cobb with a scope[1/] of 2 to 1, but the scope was sometimes varied for experimental purposes. Towing speed was usually 1½-2 knots. If the gear produced good signs of shrimp and a clear bottom was evident, the otter trawl was used over the same grounds. The otter trawl was set from the stern of the vessel with a scope of 2½ to 1. The towing speed for the otter trawl was slightly faster (3 knots) than the dredge to insure proper functioning of the doors.

The net was hauled over the side and the catch released on deck. The shrimp were separated from the debris, washed, and accurately weighed. Samples of each catch were packed in 5-pound boxes, flooded with water, and quick-frozen. The weight (in pounds) of each species was recorded for all catches. During the investigation, a total of 21 drags were made with the otter trawl; 51 were made with the dredge; and 68 individual shrimp traps were set. Recording depth finder traces were made of all grounds fished, and fishing was carried on in depths of 8 to 225 fathoms.

DISCUSSION OF SHRIMP CATCHES: Small quantities of shrimp were found throughout most of the area explored, but possible commercial quantities of shrimp were found in few of the waters explored. As a matter of convenience for discussion, the area is divided into five districts, as follows:

1. EAST COAST OF PRINCE OF WALES ISLAND
2. WEST ARM OF BEHM CANAL.
3. UPPER BEHM CANAL.
4. EAST ARM OF BEHM CANAL
5. KETCHIKAN DISTRICT.

1/RATIO OF CABLE OUT TO DEPTH OF WATER.

A total of 19 drags were made along the east coast of Prince of Wales Island and were usually of short duration due to the lack of suitable trawling bottom.

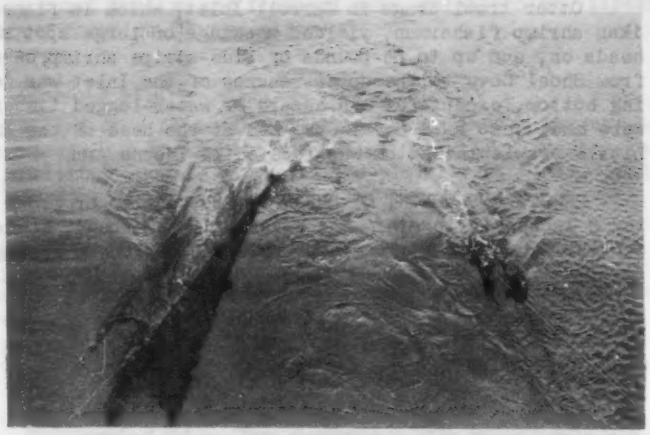

FIGURE 4 - THE OTTER TRAWL BEING HAULED IN AT THE STERN OF THE JOHN N. COBB.

Several drags with the dredge in Tolstoi Bay produced only a few pounds of pink shrimp (Pandalus borealis) and side-stripe shrimp (Pandalopsis dispar). Kasaan Bay also produced small catches of the pink variety, but the shrimp were of small size and no large concentration was located. A showing of good-sized side-stripe shrimp was found in Skowl Arm. Exploration of Cholmondely Sound revealed no suitable trawling ground. Deep-water drags (220 fathoms) were made in Clarence Strait between Ratz Bay and Luck Point, but yielded only insignificant quantities of large side-stripe shrimp.

Eight areas were investigated on the west side of Behm Canal. Of these, Spacious Bay, Yes Bay, Naha Bay, Clover Pass, and Neets Bay possess bottom conditions which make dragging operations difficult. With the exception of Yes Bay, no grounds suitable for dragging were located.

Hassler Pass yielded the best showing of shrimp in this region, with otter trawl drags producing up to 61 pounds of shrimp (mostly side stripe and spot) per hour.[2/] However, the available dragging area is limited. Shrimp traps set in Gedney Pass yielded as high as 5 pounds of large spot shrimp per trap, with best catches made in depths from 50 to 75 fathoms. Local knowledge and further exploration in this region might produce shrimp in quantities large enough to warrant a small-scale commercial trap fishery.

Otter trawl drags in depths of 40 to 80 fathoms in the Claude Point region of upper Behm Canal produced as high as 180 pounds of side-stripe and pink shrimp per hour. The bottom conditions for most of this area are excellent for trawling. However, the otter trawl was badly torn up on a snag about mid-channel between Point Lees and Claude Point. Few shrimp were caught in Baily Bay, Bell Arm, and Anchor Pass. Drags with the dredge in Burroughs Bay produced fair showings of side-stripe and pink shrimp, but the "washboard" characteristic of the bottom resulted in the fouling and mudding of the net.

The east arm of Behm Canal was explored with little success, the dragging grounds being limited to small portions of Walker Cove and Smeaton Bay. Each of these areas produced fair catches of shrimp, but in such a restricted area that sustained commercial trawling would seem impracticable.

2/AS ALL WERE NOT ONE-HOUR DRAGS, THE SHRIMP CATCH FOR DRAGS OF LESS THAN ONE HOUR WAS CONVERTED ON THE BASIS OF CATCH PER ONE-HOUR DRAG.

Otter trawl drags in Carroll Inlet, which is fished occasionally by a few Ketchikan shrimp fisherman, yielded showings of large spot shrimp weighing 5 to 6 per pound, heads on, and up to 65 pounds of side-stripe shrimp, on an hourly basis. The region from Shoal Cove to the upper reaches of the Inlet was found to have excellent trawling bottom, except for the hazard of water-logged timbers fouling the net. Best catches were made just past Shoal Cove and at the head of the Inlet in approximately 80 fathoms. Little trawlable bottom was located in Thorne Arm.

LENGTH AND WEIGHT OF SHRIMP: Spot shrimp or prawn (Pandalus platyceros), reaching 8 inches in length[3/] and weighing 6 per pound, heads on, were caught during this survey. The average length of this variety taken during this survey was slightly over 6 inches in length and averaged 11 per pound, heads on, and 21 per pound headed. Fishing results indicated the spot shrimp inhabit rocky slopes to a greater extent than the other species of commercially desirable Alaskan shrimp.

FIGURE 5 - A MIXED CATCH OF LARGE SIDE-STRIPE AND SPOT SHRIMP.

The side-stripe shrimp (Pandalopsis dispar) was the species most frequently caught throughout this spring survey, with best catches made in depths of 50 to 80 fathoms having a gray mud bottom. This species averaged 28 per pound, heads on, and 47 per pound headed.

The pink shrimp (Pandalus borealis), which makes up the bulk of the Petersburg and Wrangell commercial catch, averaged 3½-inches in length and weighed 101 per pound, heads on, and 160 per pound headed. They were found to be most abundant in areas with muddy bottoms.

The coon-stripe shrimp (Pandalus hypsinotus) was caught in small quantities in widely diversified regions. Catches of this species averaged approximately 5 inches in length and weighed 28 per pound, heads on, and 43 per pound headed.

A random sample of shrimp taken during this spring cruise showed that 7 percent of the side stripe, 18 percent of the spot, 24 percent of the coon-stripe, and 34 percent of the pink were egg carriers.

MISCELLANEOUS CATCH: Drags in Tolstoi Bay frequently produced small sculpins (Cottidae) and eel-blennies (Lumpenidae) and 1 drag in Kasaan Bay netted 200 pounds of whiting (Theragra chalcogramma) and flathead sole (Hippoglossides elassodon).

Fish common in the waters of Hassler and Gedney Pass appeared to be eel-blennies, slender sole (Lyopsetta exilis) and long-jawed rockfish (Sebastodes alutus).

Marine life commonly caught in upper Behm Canal included eel-blennies, ratfish (Hydrolagus colliei), long-nosed skate (Raja rhina), long-jawed flounder (Atheresthes stomias), and eulachon (Thaleichthys pacificus).

Walker Cove produced small numbers of English sole (Parophrys vetulus), eel pouts (Zoarcidae), slender sole, and Tanner crabs (Chinonoectes opilio).

3/ ALL LENGTHS MEASURED FROM THE EYE TO THE TIP OF THE TAIL.

Drags in Carroll Inlet captured English and flathead sole, eel-blennies, liparids (Liparidae), and small numbers of rockfish (Scorpaenidae).

RESULTS OF FALL OPERATIONS

The general plan of the second of a contemplated series of shellfish surveys in certain southeastern Alaskan waters was to explore the following areas: Tenakee Inlet, Hood Bay, Peril Strait, Salisbury Sound, waters in the vicinity of Sitka, and the open waters off Kruzof Island.

A meeting was held at the Fishery Products Laboratory in Ketchikan to discuss the present shellfish survey operation; and suggestions, criticisms, and ideas for future explorations in Alaska by all persons present were invited. This meeting was attended by the staff of the Ketchikan Fishery Products Laboratory, boat owners, fishermen, cannery owners, personnel of the John N. Cobb, representatives of the Alaska Native Service, and the Alaska Territorial Department of Fisheries.

TYPES OF GEAR: Fishing operations were carried on from November 4 to 12 in Tenakee Inlet and Hood Bay, and from November 12 to December 4 in Peril Strait, Salisbury Sound, and the inshore and offshore waters near Sitka.

Various types of gear used during this survey included an otter trawl, beam trawl, scallop dredge,[4] crab pots, and shrimp traps. The otter trawl used was the same as the small West Coast box-type trawl used on the spring trip and described in the first part of this report.

The beam trawl used in this survey was a modified version of the standard type used in the Wrangell-Petersburg shrimp fishery. The beam used was a 20-foot, 6- by 6-inch fir plank to which the "D" frames and cross braces were attached.[5] After breaking 2 of these beams, it was found that spruce or hemlock poles, approximately 8-inches in diameter, cut down to 6-inches at each end to allow attachment of the "D" frames, were better suited for withstanding the rough bottom conditions often encountered during dragging operations than the milled fir planks. The net, attached to the sweep rope and the beam was made up of 1½-inch stretched-mesh cotton webbing, 150-meshes deep. This modified beam trawl was approximately one-half the size of the average beam trawl used in the Wrangell-Petersburg shrimp fishery, and unless the shrimp were concentrated in a very small area, the catches for this survey would likely be increased accordingly with a beam trawl of commercial size.

OCEANOGRAPHIC EQUIPMENT: Water samples and subsurface temperatures were taken with the same equipment described in the first part of this report; namely, the Nansen-Knudsen-type reversing bottle, reversing thermometers, and bathythermographs. Bottom samples were collected with a snapper-type sampler. Subsurface temperatures were taken from each station, and shrimp were found in temperatures ranging from 3.9° C. (39.02° F.) to 8.1° C. (46.58° F.).

USE OF GEAR: Crab pots and shrimp traps were usually set soon after arrival at each new location. The crab pots were usually set in shallow water (20 fathoms or less) and the shrimp traps in deeper water (50-100 fathoms). A total of 43 individual crab pots and 103 individual shrimp trap sets were made.

A total of 80 drags were made with the beam trawl, the time on the bottom varying from 7 to 60 minutes. Drags of 30 minutes or 60 minutes were attempted but

4/ "GEAR USED IN THE SEA SCALLOP FISHERY," BY WILLIAM F. ROYCE, COMMERCIAL FISHERIES REVIEW; DECEMBER 1946, PP. 7-11, REPRINTED AS FISHERY LEAFLET NO. 225 (APRIL 1947).

5/ "COMMERCIAL POSSIBILITIES OF SHRIMP RESOURCES IN CERTAIN SOUTHEASTERN ALASKAN AREAS," FISHERY MARKET NEWS SUPPLEMENT, JULY 1945, PP. 5-6.

certain conditions, such as uneven bottoms, limited dragging area, and debris caused many of the drags to be shortened.

The otter trawl was used for the purpose of comparing its fishing ability with that of the beam trawl. No appreciable difference in fishing ability was noted when comparison was made between the catches of the otter trawl and beam trawl over approximately the same bottom; however, it appeared that the beam trawl was more capable of withstanding the rough bottom frequently encountered. The beam trawl was fished from the starboard davit with a scope of 2 to 1 in shallow water (20 to 40 fathoms) and $2\frac{1}{2}$ to 1 in deeper water (40 fathoms and over).

FIGURE 6 - THE BEAM TRAWL ABOUT TO BE HOISTED ABOARD THE JOHN N. COBB.

DISCUSSION OF SHRIMP CATCHES: Four major stations were fished and explored during this survey. The stations and the areas within them covered were: Station 1 - Tenakee Inlet, including Long Bay and Freshwater Bay; Station 2 - Hood Bay, including North Arm and South Arm; Station 3 - Peril Strait, including Sitkoh Bay, Saook Bay, Rodman Bay, Ushk Bay, Deadman Reach, Fish Bay, and Hoonah Sound; Station 4 - Salisbury Sound and Sitka area, including the open water off Kruzof Island, Nakwasina Passage, Nakwasina Sound, Katlian Bay, Silver Bay, Deep Inlet, Sitka Sound, and Krestov Sound.

Tenakee Inlet: A total of 20 drags were made with the beam trawl and otter trawl in Tenakee Inlet. The best showing of shrimp was found near the head of the Inlet where 1 drag at 35 fathoms produced 106 pounds of shrimp, 10 percent pink (Pandalus borealis) and 90 percent coon-stripe (Pandalis hypsinotis), on an hourly basis. There were 22 large scallops taken in a beam-trawl drag 6 miles from the head of Tenakee Inlet in 20 fathoms. A total of 5 drags were then made with the scallop dredge, and 3 drags produced no scallops, while 2 of the 5 drags averaged 39 large scallops per drag. Evidently the scallops in Tenakee Inlet are few in number and widely scattered, or are concentrated in areas not dragged by the John N. Cobb. A set of 6 shrimp traps fished 39 hours in 15 to 17 fathoms near the southeast end of a small island, 5 miles from the head of Tenakee Inlet, produced a total of 209 spot shrimp (Pandalus platyceros) averaging 8 per pound, heads on, and 256 coon-stripe. A single beam trawl drag in Long Bay netted small quantities of pink and coon-stripe shrimp, 26 hard-shell male and 12 soft-shell male Dungeness crabs. From the exploration of Tenakee Inlet, the possibility of commercial shrimp operation seems limited to trap fishing for spot shrimp or prawn in the gulleys surrounded by rocky reefs. In Freshwater Bay 5 drags were made covering an area from the head to Chatham Strait. No commercial quantities of shrimp were located; 46 pounds of mixed pink, side-stripe (Pandalopsis dispar), and coon-stripe being the largest catch of any one drag. Several shrimp traps set near Pavlof Harbor produced only one spot and 20 coon-stripe shrimp.

Hood Bay: Of four drags made in Hood Bay, three produced no sign of shrimp and one drag netted nine pounds of pink shrimp, on an hourly basis. One drag near the head of North Arm captured one small female king crab. North and South Arm produced no shrimp, although two-thirds of South Arm was covered with ice and could not be dragged. Five shrimp traps set in mid-channel from Cabin Point towards the entrance produced no shrimp, and one to five starfish were found in each trap. Throughout this survey when starfish were found in abundance, a marked absence of shrimp was noted.

Peril Strait: Several drags in depths from 128 to 178 fathoms were made in Peril Strait with small quantities of shrimp (mostly side stripe) being caught. Drags in Sitkoh and Saook Bay produced insignificant numbers of pink shrimp. Drags in Rodman Bay netted 41 pounds of pink and coon-stripe, on an hourly basis. Ushk Bay was dragged near the entrance, and produced a poor showing of pink. The head of this bay was iced-in and was not dragged. Drags in Deadman Reach resulted in negligible quantities of pink and 16 king crab (from small to medium size).

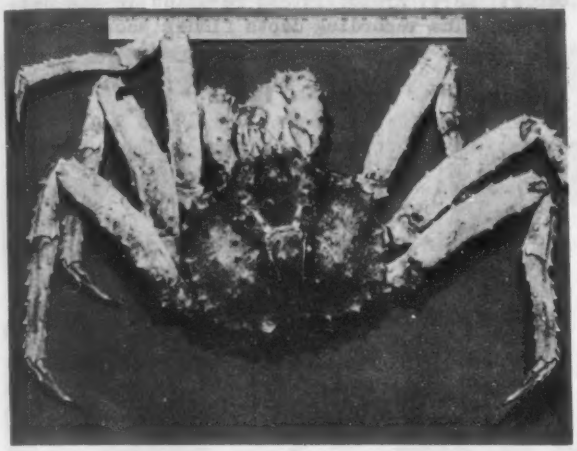

FIGURE 7 - KING CRAB TAKEN IN DEADMAN REACH. SMALL QUANTITIES OF THESE CRABS WERE TAKEN IN SEVERAL TOWS DURING THE FALL TRIP.

Beam and otter-trawl drags in Fish Bay netted as high as 250 pounds of pink shrimp on an hourly basis. The largest concentration of pink was found to be located off the "slide" area in 30 to 40 fathoms. Drags on both sides, and in mid-channel netted over 200 pounds of pink shrimp on an hourly basis. Using a 40-foot beam, pink shrimp might be taken at the rate of 400 pounds per hour. It seems possible that Fish Bay might support a small-scale dragging operation for shrimp without appreciably reducing the present population.

Of 6 drags made in Hoonah Sound, the most productive drag in 95 to 102 fathoms near the south end of Emmons Island netted 46 pounds of side stripe and pink shrimp per hour.

Commercial shrimp possibilities for this station (Peril Strait) seem to be limited to dragging for pink shrimp in Fish Bay and a trap fishery for spot shrimp in the rocky areas of both shores from Point Thatcher to Hoonah Sound. Traps set in this area produced catches of spot shrimp varying from a few to 17 pounds per trap. The average weight of 46 pounds of spot caught in traps in this area was 18 per pound, heads one, with the larger spot averaging 10 per pound, heads on. Best catches were made in depths of 60 to 80 fathoms.

Salisbury Sound and Sitka Area: A single drag near the north shore of Salisbury Sound, opposite Kalinin Bay in 92 to 100 fathoms netted 20 pounds per hour of large side stripe averaging 20 per pound, heads on. These side stripe were vermillion red in color, and all but a few of the smaller ones had eggs. Very little dragging bottom was found in Salisbury Sound. The total catch from 24 shrimp traps, set in 22 to 90 fathoms from Point Kruzof to Schulze Cove, was only 24 spot shrimp.

There were 2 beam-trawl drags made in 76 to 86 fathoms, 7½ and 10 miles off Pt. Kruzof, Kruzof Island. Of the 2 drags, one netted a small amount of pink, while the other resulted in a broked beam. This area also proved to be unproductive with regard to other forms of marine life, as only a few flathead "sole" and one long-jawed flounder were captured from the 2 drags. A single drag in 96 fathoms, 9 miles off Gilmer Bay, Kruzof Island, resulted in a large hole being torn in the

net. Although 75 to 90 percent of the catch may have been lost, this drag produced 4 pounds of spot and 1 pound of humpy shrimp (Pandalus goniurus) per hour. The spot were large, averaging 11 per pound, heads on.

One otter-trawl drag 9 miles off Pt. Mary, Kruzof Island resulted in the net snagging 8 minutes after reaching bottom. The recording depth finder showed this area to have a fairly smooth bottom, but evidently there are many rocks which are large and sharp enough to tear a net or break a beam. These rocks may be from the eruption of Mt. Edgecumbe. It is quite possible that a population of spot shrimp inhabit this area near the rocks, but dragging operations seem impracticable, and a trap fishery would probably not be feasible except in the summer months because of the inclement weather often encountered in this region.

FIGURE 8 - PORTION OF AFTERDECK OF JOHN N. COBB SHOWING TRAWLING WINCH IN OPERATION.

Beam-trawl drags in Nakwasina Passage, Nakwasina Sound, and Krestov Sound produced insignificant numbers of shrimp, as did shrimp traps set in Nakwasina Sound and near Halibut Point.

Mid-channel drags in 66 to 82 fathoms near the head of Katlian Bay averaged 162 pounds of pink shrimp per drag per hour. A single night drag with the beam trawl in Katlian Bay yielded approximately the same amount of shrimp as a daytime drag over the same location. Night drags in Fish Bay and Tenakee Inlet also produced approximately the same amount of shrimp as daytime drags in these areas. Catches in Katlian Bay indicate the shrimp population might support a small-scale dragging operation.

No shrimp were caught in seven drags in Silver Bay and Deep Inlet although one drag near the entrance of Silver Bay netted eight pounds of pink per hour.

Beam trawl drags west of Biorka Reefs, Sitka Sound, in depths of 70 to 94 fathoms netted only small amounts of humpy shrimp. Shrimp traps set in 28 to 80 fathoms near Vasilief Bank, Sitka Sound, produced poor results. The shrimp traps set in Sitka Sound contained thousands of small "sand fleas" (amphipods) which had stripped the bait, leaving only bones. This condition was also noted in other areas where traps set produced few shrimp. It is possible that when amphipods are present in such large numbers, the shrimp move out rather than compete with them for food.

DUNGENESS CRAB: A total of 43 individual crab-pot sets were made in depths of 13 to 33 fathoms throughout the areas covered in this survey. Dungeness crabs weighing up to 3½ pounds were taken in pots from all areas except Pavlof Harbor, Freshwater Bay, where 3 traps produced no Dungeness crab. Commercial fishing for Dungeness crab is carried on in Tenakee Inlet and Peril Strait each year until freezing weather causes many of the Bays to ice in, making crab fishing impracticable.

MISCELLANEOUS CATCH: Drags in Tenakee Inlet yielded up to 150-pounds of flatfish, mostly long-jawed flounder (Atheresthes stomias) and flathead "sole" (Hippoglossides elassodon). Other fish common in this area were skates (Raja sp.), sculpins (Cottidae), eel blennies (Lumpenidae), eel pouts (Zoarcidae), whiting (Theragra chalcogramma), eulachon (Thaleichthys pacificus), and sea poachers (Agonidae).

Marine life taken in Hood Bay included small whiting, starry flounder (Platichthys stellatus), ratfish (Hydrolagus colliei), and one female king crab.

Drags in Peril Strait produced large numbers (up to 150 per drag) of Tanner crab (Chionoectes opilio), small numbers of greenlings (Hexagrammidae), flatfish, and black cod (Anolopoma fimbria).

Marine life common in the Salisbury Sound and Sitka area included whiting, herring (Clupea pallasii), yellowfin sole (Limanda aspera), and rex sole (Glyptocephalus zachirus).

CONCLUSIONS

Findings of the spring and fall surveys for commercial shellfish are applicable only to the time of year they were carried on, as conditions in these areas might bring about entirely different results during other months. The development of a trap fishery for shrimp in suitable areas seems feasible, and local knowledge and investigation could possibly lead to good catches in some regions where trawling is impracticable. Spot and coon-stripe shrimp of high market value can be taken with this type of gear, and with proper mesh size and rotation of traps, a continued supply of shrimp would seem possible.

Results of the spring survey indicate that the Claude Point area in upper Behm Canal, Carroll Inlet, and Hassler Pass could possibly support a small scale beam-trawl operation for shrimp. However, the limited areas available for dragging, together with lack of information as to the total stocks of shrimp available in the areas, suggest the possibility of early depletion, in the event heavy fishing were undertaken. More intensive explorations in the Gedney Pass area might uncover possibilities for a small-scale trap fishery for spot shrimp.

Results of the fall survey suggest that pink shrimp could probably be taken in commercial quantities with a beam trawl in Katlian and Fish Bay, but the small size of these two bays and the limited dragging area available would necessarily limit the extent of any beam-trawl operation. Trap fishing for spot shrimp or prawn in Tenakee Inlet and Peril Strait yielded good commercial-sized catches of this species. The large area suitable for trap fishing and the seemingly widespread distribution of spot shrimp throughout these areas indicate a population of spot shrimp of large enough numbers to support a commercial trap fishery. Further explorations are necessary to definitely determine the size of the population of spot shrimp in Tenakee Inlet and Peril Strait.

Freezing temperatures and gale-force winds encountered during a considerable portion of the fall trip indicate that weather conditions will probably be a factor in the development of a winter fishery in this area.

NOTE: A MORE DETAILED REPORT DESCRIBING THE GEAR AND EXPLORATORY OPERATIONS WILL BE PUBLISHED IN THE NEAR FUTURE BY THE SERVICE AS A FISHERY LEAFLET.

USE OF FROZEN SALMON FOR CANNING[1/]

By Maurice E. Stansby * and John Dassow **

INTRODUCTION

During past years a relatively small portion of canned salmon has been prepared from frozen fish. Occasionally, during gluts, more fish have sometimes been brought to a cannery than could be handled, and where cold-storage facilities were available, such fish have sometimes been frozen and canned as soon as the glut was over. Such a situation has developed particularly in the Puget Sound area and other areas where cold-storage facilities are available and where the canneries have only a relatively small capacity.

In recent years frozen fish have been canned in an increasingly large amount for other reasons. Concerns which do not have canning facilities in areas where salmon are abundant have been buying frozen fish in Alaska or Canada and bringing them to locations where they have such canning facilities. The fish are then thawed and canned. This situation has developed especially in areas where the normal fish runs (salmon or other species) have been unusually low. In order to be able to continue the operations of such canneries, there has been a tendency to look for fish elsewhere. If the distance from the fishing grounds to the cannery is so great that the fish cannot be successfully preserved in ice, the only alternative has been to freeze them. In some instances the frozen fish have been held a considerable number of months before they were thawed and canned. The practice of freezing salmon for later canning has also further been encouraged by an excess of facilities suitable for handling tuna. The tuna industry in the Pacific Northwest has expanded rapidly in recent years. During several of the past years, when tuna could not be caught in abundance in this area, vessels equipped with refrigeration were available in excess of the needs of the tuna industry. Such facilities, it was felt, might be diverted to the transportation of frozen salmon from distant fishing grounds to canneries in other areas.

Tuna have been successfully frozen and canned for a considerable number of years, and ordinarily no great difficulty is encountered. In applying the same technique to canned salmon, however, certain difficulties may arise which are avoided when tuna are canned. Salmon are canned by a process in which the fish are cooked and heat-processed in the sealed can, whereas tuna receive a "pre-cook" before being placed in the can. This pre-cooking process gives a chance for certain undesirable products which may have formed while the fish were frozen to escape. Furthermore, the skin and often the dark meat lying just beneath and which contain much of the oxidized oil are removed before tuna are canned. Accordingly, with regard to canning of frozen salmon it is necessary to examine the situation very carefully, and it is not sufficient to conclude that merely because frozen tuna can be successfully canned, the same must also apply to frozen salmon.

During the past two years, the Fish and Wildlife Service technological laboratories at Seattle and Ketchikan have been carrying out experiments on the canning of frozen salmon. Salmon have been canned from fish which had been frozen round and

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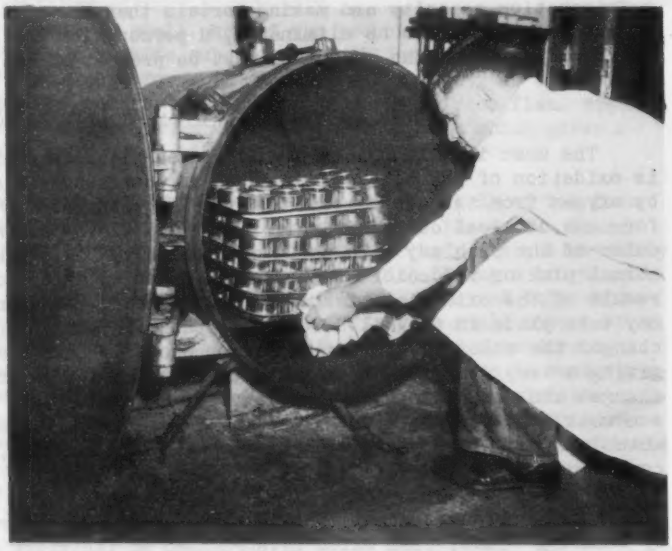
1/ PRESENTED AT THE NATIONAL CANNERS ASSOCIATION ANNUAL SALMON CUTTING MEETING, MARCH 9, 1951, SEATTLE, WASHINGTON.

stored under different conditions and the resulting packs compared for quality against fish canned from samples which had not been frozen. Relatively large samples, consisting of a considerable number of cases, have been packed and examined. Tests on these packs are still continuing but a number of general conclusions have been drawn so far. These will be discussed without specific reference to any scientific data which will be published at a later date after the tests have been completed.

There are three types of changes which may take place when using frozen salmon for canning that do not ordinarily occur when fresh (unfrozen) fish are canned. The first change involves bacterial spoilage of the fish during the freezing process; the second, deterioration, including oxidation of the fish after it is frozen and while it is being held in the frozen state in cold storage; and the third, alterations in the salmon which are brought about directly by the freezing process. The first two of these involve changes which can be eliminated or greatly minimized by proper handling techniques; the third, which is beyond control by proper handling techniques, can be held to a minimum by limiting the storage period of the frozen fish.

BACTERIAL SPOILAGE OF SALMON DURING FREEZING

Undoubtedly, the most serious and yet the most easily prevented change which may take place in frozen salmon is bacterial spoilage during the freezing process. This takes place when the fish are frozen at an exceedingly slow rate--many hours elapse before the fish are frozen completely through to the center. This difficulty is encountered when inadequate freezing facilities are available and a larger quantity of fish frozen than the refrigeration capacity of the freezing equipment is designed to handle. Such a situation often occurs on vessels where space is at a premium and it is impossible to carry a large reserve of refrigeration. In the case of refrigerated tuna boats, fish are usually frozen in brine wells and it is easy to place more fish in the well than the system was designed to handle. Poor circulation of the brine may cause extremely slow freezing to take place at certain locations in the brine well.



REMOVING CANS OF SALMON FROM RETORT AFTER PROCESSING AT A SERVICE TECHNOLOGICAL LABORATORY.

In freezing, even when proper circulation of the brine takes place and no overcrowding of the wells is attempted, the outside of the fish first starts to freeze,

and the frozen zone gradually moves to the center. Whereas the outside portion of the fish may start freezing within a few minutes after the fish is placed in the brine well, the center of the fish may not be frozen for 12 or more hours. During the first few hours after the fish is placed in the brine well, the temperature at the center of the fish may be only slightly lower than it was when the fish was placed in the brine. If bacteria are present within the center of the fish, spoilage will continue for some hours after the fish is placed in the brine well. If the brine well is overcrowded and inadequate refrigeration and circulation of the brine is present, the length of time required for freezing the center of the fish ordinarily may be extended from one-half a day to several days. Under such circumstances extensive bacterial spoilage may take place in the centers of some fish in the brine well even though the fish were in prime condition when placed in the well. It is extremely difficult to cull out partially spoiled fish when they are thawed for canning since spoilage is present only at the center of the fish and may be easily overlooked. This spoilage, moreover, is of the type that will render the fish inedible and subject to seizure by the Food and Drug Administration. Hence, if such fish should be canned, it is necessary to open the entire pack and re-process those which have not spoiled, an exceedingly expensive and undesirable procedure.

Fortunately, this difficulty can be completely eliminated by using an adequate refrigeration capacity and making certain that the system is not overloaded. If this difficulty is to be eliminated, a person with the necessary technical knowledge of the capacity of the equipment must be present at the time the fish are frozen.

DETERIORATION OF FROZEN SALMON IN COLD STORAGE

The most important change which takes place in frozen salmon in cold storage is oxidation of the oils and pigments of the fish. This is a chemical change whereby oxygen from the air combines chemically with the fish oil and fish pigments to form new chemical compounds which alter the flavor and appearance of the fish. The color of the fish may be altered considerably. This takes place in two ways: the normal pink or red color of the salmon fades to a more-or-less colorless hue as a result of the oxidation of some of the pigment. An even more objectionable change may take place in the oil directly beneath the skin. In some cases this oil oxidation changes the color of the normal salmon hue to a dark brown or nearly black color, giving a very unsightly appearance to the canned product. Accompanying these color changes are alterations in the flavor of the fish oil. The fresh oil has a bland, somewhat fishy flavor; upon oxidation, the oil acquires a sharp, penetrating flavor which is known as rancidity. Development of rancidity, if carried to an extreme condition, makes the fish inedible.

Changes brought about by oxidation during cold storage are further accentuated by canning. Thus, fish which have reached an incipient stage of oxidation and show only a slight or no off-flavor after thawing and canning, may have a strong off-flavor. For example, pink salmon, which appear to be in good condition after six months storage at 0° F., will yield a canned product having a definite off-flavor even though the thawed fish would have been of satisfactory quality had they not been canned.

The five species of salmon are not affected to the same extent by the action of oxygen during cold storage. Pink salmon are by far the most prone to oxidation. This species may become completely rancid within a few months of the time it is placed in cold storage, whereas the other species protected only by mediocre means,

oxidize to such a small extent that they usually can be held without serious deterioration for at least nine months. Pink salmon are seldom cut into fillets or other dressed forms and then frozen. Since their storage life is of an exceedingly short period, they cannot be marketed before becoming inedible. When pink salmon are stored round and if protected adequately by an ice glaze, they can be stored for about six months before evidences of rancidity and oxidation become pronounced.

Most of these changes due to oxidation can be minimized by using good handling practices during cold storage. One of the best ways to minimize these changes is to hold the fish at as low a temperature as possible. Fish stored at 0° F. will keep more than twice as long as fish stored at 20° F. In addition to the use of low storage temperatures, it is important to protect the fish in such a way that oxygen from the air does not reach the meat or oil. For whole fish, this is best accomplished by providing a good ice glaze of sufficient thickness when the fish are first put in cold storage. If such fish are held for a sufficiently long period, the ice glaze may disappear by evaporation. In such cases, it is important to replace the glaze before it has disappeared by re-glazing or spraying the fish if they are to be held for any extended period of time. The ice glaze should be applied immediately after the fish have been completely frozen.

CHANGES CAUSED BY FREEZING

When fish are canned, usually a small part of the protein rises to the surface of the can and coagulates to form a white substance resembling egg white, commonly known as curd. Ordinarily, this curd forms in such a small quantity as to be unnoticeable. Frozen fish have a tendency to form more curd than fresh fish. Apparently the freezing process causes a certain amount of denaturation which gives a product more curd than would be the case if the fish had not been frozen.

The curd is more objectionable in canned fish when the main bulk of the fish has a bright color, contrasting sharply with the white color of the curd. Thus, chum salmon, which have a very light color, even without the curd, are not seriously impaired even with a considerable quantity of curd. When fish having a bright red color (such as chinook or sockeye salmon) are canned, there is a marked contrast between the color of the curd and the color of the canned fish. A small amount of curd formed with such fish will be readily noticed and may detract considerably from the appearance of the canned product. Accordingly, the increase in curd formation brought about by canning frozen fish is a less serious problem with chum and pink salmon than it is with the other species, especially when the fish have been stored for only a short period of time. When salmon stored in the frozen state for several months are canned, the curd will be dark and discolored, and this is objectionable for all species.

All salmon contain a certain amount of body oils, the amount varying from a very small percent in the case of chum salmon to more than 10 percent of the weight of king and sockeye salmon. Ordinarily, this oil is dispersed throughout the fresh or frozen salmon. When salmon is canned, however, some of the oil is released from its combination with the tissues of the fish and works its way to the top of the canned fish. It can be noted that there is a certain amount of moisture mixed with oil at the surface of an opened can. This oil, which is known as free oil, represents only a part of the oil in the can since most of it is still combined in the tissue of the fish. Fish which contain only a small percentage of oil in the meat will give a very small amount of free oil, whereas the more oily species, such as chinook and sockeye, yield a very appreciable amount of free oil.

In certain markets the presence of free oil is considered as giving the canned salmon a premium value, and fish which have less than the average amount of oil

would be considered of inferior grade. It has been found that when salmon are frozen, thawed, and canned, the amount of free oil is lower than in cases where the fish have not been frozen. Some free oil is always present, but there is a definite decrease in the amount. This lowers the value of the pack in the eyes of certain brokers, especially in the case of the more oily and expensive species, such as canned chinook salmon. The nutritive value of the fish has not been diminished because the total oil content of the canned salmon remains the same. It is merely that more of the oil is held within the tissue of the fish canned from frozen salmon than is the case of fish which had never been frozen.

In addition to these changes resulting in loss of free oil and excessive curd in salmon canned from frozen fish a definite change in the texture of the fish is noticeable. Salmon canned from frozen fish tends to be firmer and appears drier than that canned from fresh (unfrozen) fish. Many individuals do not find this objectionable when it is present to a slight extent and some even prefer it to the softer, moist texture of a normal pack. In many instances, however, the texture becomes excessively firm and even tough. The salmon seems much drier and has a definite "woody" texture noticeable when eaten. This is especially true of packs prepared from salmon frozen and stored for periods longer than two months and it is objectionable to most people. Apparently these alterations in the texture of the fish are related to the changes which cause loss of free oil and presence of excessive curd in salmon canned from frozen fish.

These changes resulting in loss of free oil, formation of curd, and development of undesirable texture in salmon canned from frozen fish are changes for which there is no simple remedy as yet. However, neither the curd nor free-oil problem is extremely detrimental but does cause a slight lowering in the quality of the fish.

Table 1 - Summary of Importance of Various Problems in Canning Different Species of Frozen Salmon

Problem	Relative Importance				
	Chum	Pink	Silver	Sockeye	King or Chinook
Spoilage[1]	XXXXX	XXXXX	XXXXX	XXXXX	XXXXX
Oxidation[2]	XXX	XXXXX	XXX	XXX	XXX
Curd[3]	XXX	XXX	XXX	XXXX	XXXX
Free oil[3]	X	XX	XXX	XXXX	XXXX
Abnormal texture[3]	XXX	XXX	XXX	XXX	XXX

1/ THIS PROBLEM CAN EASILY BE OVERCOME BY USE OF PROPER TECHNIQUES IN FREEZING THE FISH.
2/ THIS PROBLEM CAN BE GREATLY REDUCED OR ELIMINATED IF ADEQUATE TECHNIQUES ARE APPLIED IN STORING THE FROZEN FISH AND IF IT IS NOT ATTEMPTED TO STORE THE FISH FOR TOO LONG A PERIOD OF TIME.
3/ THESE PROBLEMS CANNOT BE COMPLETELY CONTROLLED BY PROPER FREEZING AND STORAGE TECHNIQUES, BUT CAN BE HELD TO A MINIMUM BY NOT STORING THE FROZEN FISH FOR TOO EXTENSIVE A PERIOD OF TIME.

XXXXX FACTOR OF CONSIDERABLE IMPORTANCE.
XXXX FACTOR OF IMPORTANCE.
XXX FACTOR OF SMALL IMPORTANCE.
XX FACTOR OF VERY SMALL IMPORTANCE.
X FACTOR OF NEGLIGIBLE IMPORTANCE.

Table 1 summarizes the relative importance of the problems of spoilage, oxidation, curd, and free oil when different species of salmon are canned from frozen fish. Spoilage of the fish before they are completely frozen can be a very serious problem with any of the five species. The least difficulty is encountered with the other problems when frozen chum salmon is canned. Frozen pink salmon can be successfully canned provided adequate care is taken to protect it against oxidation in cold storage. With silver, sockeye, and king salmon, even with the best freezing and storage handling methods, some small though definite decrease in quality of the canned salmon will result.

RECOMMENDATIONS

In order to obtain the highest quality pack of canned salmon, it is recommended that wherever possible unfrozen fish be used. When frozen salmon are used for canning, the pack will always be slightly inferior even though the utmost precautions are taken and the best technical knowledge is applied to the freezing and cold storage of the fish. If such technical knowledge is used throughout the processing of the fish, it should be possible to obtain a product which is perfectly marketable even though slightly inferior to the best packs of unfrozen fish. Adverse quality changes are greater for salmon which have been frozen for long periods even though proper storage procedures are observed. For this reason it is recommended that the length of storage for the frozen fish be held to a minimum. To minimize quality changes during storage, periods longer than two to three months at 0° F. are not recommended. If frozen fish must be used, it is of extreme importance to use the best modern knowledge of freezing and storing techniques. If such practices are ignored, packs will result anywhere from being of extremely low quality to an extreme case where the pack is completely inedible and must be discarded or re-processed at considerable loss to the packer.

REFRIGERATED LOCKER STORAGE OF FISH AND SHELLFISH

Too frequently the locker operator and user fail to realize that fish as well as other foods have a maximum storage life even in the frozen state. The dry atmosphere of the storage room and the difficulty encountered in sealing the product away from air contribute most to shortening storage life.

Several changes take place in locker storage which must be guarded against by adequate packaging to exclude air. One change, common to all frozen fish, is a gradual removal of moisture from the flesh over a prolonged storage period in the relatively dry atmosphere of the cold-storage room. This drying renders the fish tough, fibrous, and insipid. The other change which occurs with certain oily fish is an oxidation resulting in development of rancidity, fading or other changes in the pigments of fish having colored flesh (as salmon), and development of off-colors (usually yellow or brown) sometimes known as "rust." These changes eventually render the fish flesh inedible. A guide by Stansby and Harrison (1942) and Stansby and Dassow (1942) for selecting a packing method and estimating the storage life of frozen salt-water fishes asserts that, in general, a locker storage life of at least six months may be expected for the most properly packaged frozen fish.

--Fishery Leaflet 128

March 1951

CANNING: Handling Frozen Salmon to be Used for Canning: See report on "Use of Frozen Salmon for Canning" by M. E. Stansby and John Dassow, in this issue of Commercial Fisheries Review, pp. 20-25

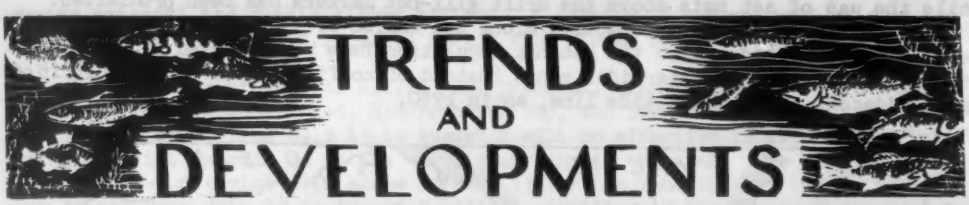
* * *

REFRIGERATION: Palatability and Cold Storage Life of Various Species of Rockfish: Organoleptic examinations were carried out on samples of frozen rockfish and East Coast ocean perch in connection with the comparative tests to determine the cold storage keeping qualities of a number of species of Pacific Coast rockfish and East Coast ocean perch. This month's tests were made on samples of Sebastes marinus (ocean perch), Sebastodes alutus (long-jawed rockfish), S. paucispinis (bocaccio), and "idiot" (scientific name unknown) after seven months of storage at 0° F. The ocean perch samples were quite rancid, rendering them relatively poor in quality. The long-jawed rockfish were rated as fair since they had only a slight degree of rancidity and were slightly tough in texture. The bocaccio samples were rated poor, due primarily to the development of an extremely tough texture. The dark meat of the bocaccio samples was rancid whereas the white meat possessed a fairly good flavor. The "idiot" samples were rated inedible since they were extremely rancid and had an abnormal mushy texture.

This was the first month in which the long-jawed rockfish samples received a higher rating than the ocean perch, and this was due to the fact that a sudden increase in rancidity development occurred for the ocean perch which placed them in a lower category than the long-jawed rockfish samples. (Seattle)

DO YOU KNOW...

That differences in size, color, flavor, and texture make some varieties of fish and shellfish more desirable than others.



Additions to the Fleet of U. S. Fishing Vessels

First documents as fishing craft were issued for 50 vessels of 5 net tons and over during January 1951—15 more than in January 1950. California led with 7 vessels, followed by Texas with 6, and Louisiana with 5, the Treasury Department's Bureau of Customs reports.

To provide a more detailed breakdown of the documentation of vessels in the South Atlantic and Gulf States, the number of vessels documented in each of these areas will be shown separately in the future. Of the 26 vessels documented in the South Atlantic and Gulf States this January, 18 had their home port in the Gulf States and 8 in the South Atlantic States.

Vessels Obtaining Their First Documents as Fishing Craft, January 1951

Section	January 1951	January 1950	Total 1950
	Number	Number	Number
New England	2	4	36
Middle Atlantic	3	2	45
Chesapeake Bay	2	2	81
South Atlantic	8	11	153
Gulf	18	5	167
Pacific Coast	13	9	231
Great Lakes	1	-	12
Alaska	3	2	83
Hawaii	-	-	4
Total	50	35	812

Note: Vessels have been assigned to the various sections on the basis of their home port.

Alaska Fishing Regulations for 1951 Issued

In announcing the 1951 regulations for the protection of the commercial fisheries of Alaska, the Secretary of the Interior declared on March 6 that the new regulations contain several changes to meet shifting conditions in the fisheries.

The principal change will occur in the Bristol Bay area with power boats permitted for the first time this year. The Department has been aware of the fact that the use of power boats in Bristol Bay will undoubtedly make some changes in the economic status of the area. As an aid to the local residents, the Department has opened to set-net fishing all intertidal waters outside of the drift gill-net markers,

while the use of set nets above the drift gill-net markers has been prohibited. This, in effect, permits set-netting along the shores of the bay wherever drift-netting is permitted. Also the set-net regulations have been relaxed to allow operations anywhere in the intertidal zones instead of confinement to a narrow strip of beach adjacent to the high-tide line, as in 1950.

ALASKA (SEE OTHER CUT FOR SOUTHEASTERN ALASKA)

For the first time this year, the Department of the Interior finds it necessary to place control on fishing for personal use. In the Cook Inlet area in the vicinity of Anchorage, and in the upper Copper River, certain streams have been closed entirely to salmon fishing, including that for local use. Only five out of the hundreds of streams in Alaska, however, have been closed. Salmon runs in those streams, already greatly reduced, would be completely destroyed without such protection.

Commercial fishermen in Alaska have been expressing widespread opposition to the use of the so-called "mothership," particularly in gill-net fishing, because of the danger of overfishing. The prohibition against "mothership" operation, which was previously applied only to purse seining, therefore has now been extended to include all forms of mobile gear.

The 1951 regulations require a new method of rendering salmon traps inoperative during seasonal and weekly closed periods. A section of the pot wall of each trap must be opened and sealed in place during such closed seasons.

In the areas of Central Alaska, the principal changes include longer weekly closed periods in Cook Inlet, Resurrection Bay, and Yakutat. On Kodiak Island the midseason closure from July 15 to August 1 will be effective in 1951 in the Red River district as well as in the other districts in the area. The fishing season in the Karluk district will close on July 15 for the remainder of the year. A summer season from July 10 to August 7 will be permitted in the Copper River area for red salmon because of the opinion that there is a small run in that area not now being utilized.

In the Yakutat area the king salmon season has been curtailed in Dry Bay but fishing for red salmon has been liberalized and will commence on June 18 instead of July 1.

Throughout Southeastern Alaska the maximum length of purse seines has been standardized at 250 fathoms, with which a lead of 75 fathoms may be used. The taking of coho salmon by any means is prohibited in the area from September 20 to July 1 of the following year. The prohibition against taking or possessing undersized king salmon, which applied throughout Alaska in 1950, will apply only in Southeastern Alaska in 1951.

The Fish and Wildlife Service, which makes and enforces the commercial fishing regulations for Alaska, reports that there was a good escapement of pink salmon in Southeastern Alaska in 1949 and evidence indicates a high survival ratio from that escapement. The run this year is expected to be good and fishing will be permitted from August 6 to September 1, as compared with August 15 to September 3 last year. Fall fishing for chums from October 1 to October 6 will be experimental in nature and close watch will be maintained to see that no undue numbers of late pink salmon are taken. In addition, the new regulations will permit a limited purse-seine fishery from July 16 to July 28 in the outside waters from Cape Muzon to Cape Ulitka.

To protect the herring resources, the commercial quota for 1951 has been reduced from 150,000 to 100,000 barrels. The Service reports that this reduction was necessary because the stocks of herring in Southeastern Alaska suffered a further decline in 1950 because so few young fish, which are the basis of the future fishery, appeared.

The 1951 regulations are based upon investigations and recommendations made by Fish and Wildlife Service, testimony presented at public hearings in the major fishing communities in Alaska and in Seattle, Wash., and information submitted in briefs by persons interested in protecting the resource.

Anglers' Fishing License Sales Drop But Revenue Increases

FISHING LICENSE SALES—JULY 1, 1949 to JUNE 30, 1950

STATE	RESIDENT	NON-RESIDENT	TOTAL	FEES PAID BY ANGLERS
ALABAMA	141,625	8,940	150,565	$ 166,861
ARIZONA	60,988	10,014	71,002	222,598
ARKANSAS	190,034	65,566	255,600	437,905
CALIFORNIA	984,084	11,746	995,830	3,033,755
COLORADO	230,050	60,973	291,023	913,998
CONNECTICUT	74,695	3,356	78,051	337,018
DELAWARE	5,084	1,688	6,772	16,796
FLORIDA	186,265	89,486	275,751	654,403
GEORGIA	104,567	3,388	107,955	270,194
IDAHO	157,780	40,253	198,033	682,734
ILLINOIS	663,573	29,779	693,352	722,683
INDIANA	541,204	38,084	579,288	736,993
IOWA	339,975	12,263	352,238	680,470
KANSAS	244,409	7,326	251,735	380,560
KENTUCKY	280,829	42,191	323,020	530,448
LOUISIANA	72,121	10,529	82,650	111,083
MAINE	109,128	52,769	161,897	513,269
MARYLAND	58,328	13,973	72,301	119,932
MASSACHUSETTS	205,606	5,684	211,290	473,850
MICHIGAN	771,088	279,668	1,050,756	2,008,307
MINNESOTA	671,071	243,791	914,862	2,198,092
MISSISSIPPI	105,943	52,075	158,018	413,275
MISSOURI	550,523	44,169	594,692	1,293,808
MONTANA	156,298	27,059	183,357	566,009
NEBRASKA	205,202	11,743	216,945	302,024
NEVADA	20,998	13,236	34,234	120,039
NEW HAMPSHIRE	83,126	41,052	124,178	415,544
NEW JERSEY	104,831	8,121	112,952	355,098
NEW MEXICO	64,057	37,013	101,070	391,165
NEW YORK	639,953	27,984	667,937	1,787,061
NORTH CAROLINA	216,037	36,786	252,823	617,022
NORTH DAKOTA	61,271	443	61,714	25,367
OHIO	821,936	32,454	854,390	962,570
OKLAHOMA	358,142	40,926	399,068	942,968
OREGON	246,480	19,641	266,121	1,165,066
PENNSYLVANIA	622,059	19,493	641,552	1,343,290
RHODE ISLAND	21,365	279	21,644	39,360
SOUTH CAROLINA	154,159	5,535	159,694	209,320
SOUTH DAKOTA	111,097	28,239	139,336	214,912
TENNESSEE	410,329	146,892	557,221	909,323
TEXAS	323,893	7,239	331,132	488,566
UTAH	97,640	4,731	102,371	379,155
VERMONT	73,151	27,205	100,356	255,399
VIRGINIA	273,821	3,208	277,029	532,722
WASHINGTON	418,018	21,415	439,433	1,914,823
WEST VIRGINIA	282,362	15,019	297,381	736,182
WISCONSIN	691,703	279,089	970,792	1,754,593
WYOMING	101,769	46,578	148,347	671,399
	13,308,667	2,029,091	15,337,758	$34,018,009

In spite of a small decline in the number of anglers' licenses sold during the year ended June 30, 1950, fresh-water fishing continued to rank high on the list of America's favorite outdoor sports, the Director of the Fish and Wildlife Service reported on March 18.

Based on sales records supplied by the States, the Service has completed compilations which show that the total fishing licenses sold in the 1949-50 period numbered 15,337,758. This represents a drop of 140,812 from the all-time high figure of 15,478,570 recorded for the preceding year.

The gross revenue derived by the 48 States from these license sales, $34,018,009, broke all previous records. The previous high was $32,657,940 for the fiscal year ended June 30, 1949.

In the number of licenses issued, Michigan again headed the list with 1,050,756. California ranked second with 995,830, followed by Wisconsin with 970,792; Minnesota, 914,862; Ohio, 854,390; Illinois, 693,352; New York, 667,937; Pennsylvania, 641,552; Missouri, 594,692; Indiana, 579,288; and Tennessee, 557,221.

California exceeded all other States in revenue received with $3,033,755. Minnesota was in second place with $2,198,092, followed by Michigan with $2,008,307; Washington, $1,914,823; New York, $1,787,061; Wisconsin, $1,754,593; Pennsylvania, $1,343,290; Missouri, $1,293,808; Oregon, $1,165,066; and Ohio, $962,570.

Branch of Commercial Fisheries Personnel Changes

The transfer of several employees from the Service's Branch of Commercial Fisheries to the Defense Fisheries Administration has resulted in a number of personnel changes and new assignments within the Branch.

Wm. H. Dumont, formerly Chief of the Branch's Fishery Market News Section, has been reassigned as Chief of the Educational and Market Development Section to fill the vacancy left by the transfer of the former Chief, Don Aska, to DFA Area Representative in New Orleans. Dumont has been with the Service for about 22 years. Prior to his assignment as Chief of the Market News Section, he organized and was placed in charge of the Section's New York office, and before this he had conducted a number of statistical fishery surveys. Before entering Government service, he had his own oyster planting and shucking business in New Jersey. Dumont is a graduate of Rutgers University.

Joseph Pileggi has been promoted from Assistant Chief to Chief of the Market News Section. For the past three years, Pileggi has been responsible for the editing and preparation of the Service's monthly publication, Commercial Fisheries Review. Prior to his assignment to Washington, he served in various capacities in the Section's New York, Boston, and Jacksonville offices. A World War II veteran, he has been with the Section for almost 14 years. He received his education at Boston University, Washington University, and New York University.

C. Eldred Peterson has been appointed Chief of the Branch's Statistical Section to fill the vacancy left by the transfer of the former Chief, E. A. Power, to DFA as Chief of the Material Facilities Branch. Peterson transferred from the position of Chief of the Branch of Alaska Fisheries' Statistical and Analytical Unit in Seattle. Formerly he was Assistant Chief of the Statistical Section of the Branch of Commercial Fisheries. Prior to this he was employed by the New Orleans Quartermaster Marketing Center in the capacity of a marketing specialist, and before that he was in charge of the New Orleans Fishery Market News Service office. A graduate of the University of Washington School of Fisheries, he has also had commercial fishing experience in Alaska, Louisiana, and Mississippi.

Walter H. Stolting has been promoted from Assistant Chief to Chief of the Branch's Economics and Cooperative Marketing Section. The position of Chief was held by Dr. Richard A. Kahn prior to his transfer to DFA as Chief of the Economic Facilities Branch. Employed by the Service since 1944, Stolting entered Government service in 1936 when he was hired by the Bureau of Agricultural Economics of the Department of Agriculture to gather data in connection with parity prices. In 1942 and until he joined the Fish and Wildlife Service, he was employed by the War Department on a wartime statistical assignment. A graduate of Columbia University, his acquaintance with the fishing industry came early when, as a boy, he worked in his family's retail food market where fish was one of the principal commodities handled.

Georgia, South Carolina, and Massachusetts School-Lunch Programs Use More Fish

Introduction: One method currently being used by the U. S. Fish and Wildlife Service to increase the use of fishery products in the school-lunch program consists of demonstrations for school lunchroom managers and officials in various states.[1/] The Educational and Market Development Section of the Service's Branch of Commercial Fisheries during the past two years has been engaged in developing markets for fishery products through the school-lunch program by encouraging the use of these products in school-lunch menus. Schools, as volume users of food in their lunch programs, represent a large potential market for fishery products. In addition, educating children to eat fish and shellfish will make them better potential adult consumers in the future. Many school lunchrooms are not accustomed to using fish and shellfish because school lunchroom managers and officials claim that fishery products are too difficult to prepare, create strong cooking odors, are too expensive, are not eaten by most children, or that these products are not readily available in their particular area.

The following is a report of the work done in Georgia, South Carolina, and Massachusetts.

Georgia and South Carolina: School-lunch programs are now using 55 percent more fish in South Carolina, and approximately 73 percent more in Georgia. These facts were brought out in a recent survey made by the Educational and Market Development Section to determine the results of the 46 fish-cookery demonstrations it sponsored for the schools of these states during 1949 and 1950. The figures were based on data from 1,811 schools represented at the demonstrations. An analysis of the Georgia school-lunch menus for September, October, and November 1948 indicated the need for an educational program on fishery products for school lunchrooms. This preliminary survey revealed that the average school in Georgia used fishery products only once a month. Of even greater concern was the fact that 38 percent of the schools failed to serve fish in any form. Officials connected with the school-lunch program in Georgia advanced several reasons for this lack of fish in the school diet, but generally they hinged on the lack of supplies on local markets and the belief that the students did not like fish. Other reasons given included preparation difficulties, odor, and price.

A survey of the availability of fish to Georgia schools showed that ample supplies were available in almost all localities. Since fish is low in cost, nutritious, and a good food for children when properly prepared, it was felt that a general lack of knowledge about fish and fish cookery was the main reason for the schools using little or no fish.

To remedy this situation the Fish and Wildlife Service, in cooperation with the Georgia Department of Education and the U. S. Department of Agriculture conducted a series of fish-cookery demonstrations for groups of school-lunch managers in Georgia in April, October, and November 1949. Altogether 26 school-lunch demonstrations were presented in various localities throughout the State. The places where these were held are listed on the following page.

1/ ALSO SEE COMMERCIAL FISHERIES REVIEW, SEPTEMBER 1950, PP. 23-26; JULY 1950, P. 17; APRIL 1950, PP. 49-51.

NOTE: C. B. LOWDEN, SAVANNAH, GA., AND B. E. LINDGREN, BOSTON, MASS., FISHERY MARKETING SPECIALISTS OF THE EDUCATIONAL AND MARKET DEVELOPMENT SECTION, BRANCH OF COMMERCIAL FISHERIES, U. S. FISH AND WILDLIFE SERVICE, DID THE FIELD WORK ON WHICH THIS REPORT IS BASED.

Augusta	Americus	Moultrie	Brunswick	Dublin
Macon	Douglas	Valdosta	Reidsville	Statesboro
Thomaston	Nashville	Waycross	Sandersville	Sylvania
Columbus	Thomasville	Atlanta	Swainsboro	Savannah
Cordele	Cairo			

At each demonstration six fishery recipes were prepared in full view of the audience by a home economist of the Fish and Wildlife Service. In addition, information on the purchasing, storing, thawing, and serving of the different fishery products was presented. The Service's Fishery Marketing Specialist assigned to the State also added information on the seasonal availability of fish in each locality. Evidence of the interest in the project was shown by the fact that 1,122 persons attended these demonstrations, representing schools with an aggregate of over 233,000 students. More impressive was the fact that the data collected following the demonstrations indicated that the use of fish by Georgia's schools had nearly doubled.

AT A FISH-COOKERY DEMONSTRATION FOR SCHOOL-LUNCH SUPERVISORS, HOME ECONOMIST JEAN BURTIS OF THE EDUCATIONAL AND MARKET DEVELOPMENT SECTION OF THE BRANCH OF COMMERCIAL FISHERIES IS SHOWING HOW TO PREPARE AND BAKE FROZEN HADDOCK FILLETS.

With this experience, plans were made to do similar work in South Carolina. The work in South Carolina began in January 1950, when plans were made (in cooperation with the School Lunch Program of the State Board of Education) for 20 fish-cookery demonstrations for school-lunch personnel throughout the State in February, March, and April 1950 at the following locations:

Greenville	Florence	Spartenburg	Orangeburg	Warrnville
Pickens	Lancaster	Greenwood	Walterboro	Columbia
Kingstree	York	North Augusta	Camden	Aiken
Conway				

The attendance at the South Carolina demonstrations exceeded normal expectations. An average of more than 100 people attended each demonstration. Nearly 80 percent of the South Carolina schools were represented at these demonstrations. Such coverage was possible because of the many localities at which demonstrations were scheduled, and the close and complete cooperation of the State school-lunch program officials.

According to the school-lunch officials of both Georgia and South Carolina, there was no question that the use of fish in the schools increased after the demonstrations. To determine more accurately how effective the demonstrations had been, a menu study was made of the school menus in both States before and after the demonstrations. In Georgia, a 3-month period before (September-November 1948) and a 3-month period after the demonstrations was used as an index of what could be expected on a yearly basis. Almost half of the schools represented at the Georgia demonstrations were used as a sample. The survey in Georgia showed that schools not serving fish at all had decreased from 38 percent before the demonstration, to 7 percent after the demonstrations. It also showed that the average school was buying about 77 pounds of fish monthly, 33 pounds (or 73 percent) more than had been used previous to the demonstrations.

In South Carolina a similar survey covering a 2-month period before (April and May 1949) and after the demonstration of 25 percent of the schools represented showed that the average school prior to the demonstrations had been buying about 79 pounds of fish per month. After the demonstrations this increased to about 122 pounds per month or an average increase of 53 pounds per school.

In contrast, studies of school menus of 89 South Carolina schools which did not have a representative at any of the fish-cookery demonstrations revealed that less fish was used in 1950 than by these schools in 1949. The actual decrease in poundage was about 1 percent, while the number of meals including fish decreased 4 percent.

Table 1 - Results of Georgia and South Carolina School-Lunch Program Fish-Cookery Demonstrations

	Times Fish Were Used Per Month Per School			Average Amount of Fish Used Per Month Per School		
	Demonstration		Percentage	Demonstration		Percentage
	Before	After	Change	Before	After	Change
	No.	No.	%	Lbs.	Lbs.	%
Georgia:						
Schools Represented	1.14	1.97	+ 73	44.7	77.2	+ 73
South Carolina:						
Schools Represented	2.1	3.0	+ 43	79.0	122.3	+ 55
Schools Not Represented ...	2.6	2.5	-4	77.6	77.0	-1

From the data in table 1 and other data developed from the survey, it has been estimated that the schools of Georgia and South Carolina will use an additional $227,000 worth of fish annually[2/] as a result of the demonstrations in those States.

Massachusetts: The Service during 1950 completed a program in Massachusetts designed to stimulate the consumption of fishery products through the school-lunch program of that State. Upon the conclusion of a short preliminary survey early in 1949 to determine the supply and distribution facilities of the State, a comprehensive demonstration program was arranged in cooperation with the authorities responsible for the administration of the school-lunch program in both public and private institutions.

A series of 20 fish-cookery demonstrations were conducted by the school-lunch program staff of the Educational and Market Development Section. There was considerable interest in the demonstrations, which were attended by 1,002 persons. The

2/BASED ON AN AVERAGE PRICE OF 35 CENTS PER POUND.

individuals who attended represented 142 school-lunch cafeterias, plus many industrial and public institutions. Seven supplemental demonstrations for college and public groups drew 346 home economics teachers, college students, and homemakers.

Both the Federal and State agencies connected with the school-lunch program in Massachusetts assisted the Service's fishery marketing specialists in mapping out the schedule of 20 school-lunch demonstrations so that adequate coverage in the State would be obtained. Final arrangements for each demonstration were then completed through individual contacts with the local school officials where demonstrations had been scheduled. The demonstrations were held in:

Boston	Brockton	Hyannis	Newburyport	Springfield
Brookline	Franklin	Lowell	Gloucester	Amherst
Framingham	New Bedford	Lawrence	Fitchburg	Greenfield
Quincy	Taunton	Danvers	Worcester	Pittsfield

Each demonstration was conducted by a home economist detailed from the Fish and Wildlife Service Laboratory Kitchen in College Park, Maryland. The recipes used, developed, and tested at this test kitchen, fully meet the minimum nutritional requirements[3/] established under the standards of the National School Lunch Program. The fish used included plain baked fillets, fillets baked in Spanish or creole sauce, oven-fried fillets, fish shortcake, flaked fish salad, and creamed flaked fish. Because school-lunch cafeterias must serve low-cost meals, some of the less expensive fish were used in the demonstrations. Thus, either fresh or frozen pollock, whiting, or ocean perch (rosefish) fillets were used in the recipes calling for fillets. In the other recipes, canned flaked cod, haddock, hake, or pollock were used.

AT ONE OF THE FISH-COOKERY DEMONSTRATIONS FOR SCHOOL-LUNCH PERSONNEL, HOME ECONOMIST NANCY SHIPLEY OF THE EDUCATIONAL AND MARKET DEVELOPMENT SECTION OF THE BRANCH OF COMMERCIAL FISHERIES GIVES SOME MENU POINTERS FOR USING FISH IN SCHOOL LUNCHES.

During the course of each demonstration, the home economist explained, step by step, the preparation of each recipe. Special emphasis was placed on the nutritive value, mineral and vitamin content, and the comparative low cost of fish. In addition, suggestions on the purchasing, storing, and serving of fish were given, along with information on the seasonal abundance of the various varieties of fish. Special explanations also were given on how to handle the frozen fish so widely marketed today. School-lunch fish-recipe flyers and other informational publications were distributed to those attending the demonstrations. After each demonstration, question forums were held.

3/EACH HOT PLATE LUNCH MUST HAVE NOT LESS THAN A 2-OUNCE SERVING OF PROTEIN-RICH FOOD (CHEESE, EGGS, MEAT, OR FISH).

Comments on the demonstration programs from those attending were very favorable. But the best indication of their value is shown by the increase in the use of fish in Massachusetts' schools following the demonstrations. Although Massachusetts has long been a large consumer of fishery products, the program proved that even in this major fish-producing State there still exist untapped markets for fishery products.

Table 2 shows the results of these demonstrations. It is based on a follow-up survey in 92 of the 142 schools represented at these meetings. The data were taken from actual records kept by the school-lunch managers and illustrate the amounts of fish served during a four-week period before and after the demonstrations.

An over-all increase in the use of the fish of 7.2 percent in the 92 schools checked was indicated by the follow-up survey. It is interesting to note that the inland schools showed a much greater increase in the utilization of fish in school lunches, while many of the schools located nearer the coast indicated no change in their fish consumption following the demonstrations. The reason for this variance is found, of course, in the fact that previous to the demonstration many inland schools had used very little fish.

Table 2 - Results of Massachusetts' School-Lunch Program Fish-Cookery Demonstrations

	No. of Schools	4-Week Period Demonstration		Percent Gain
		Before	After	
		Pounds of Fish Served		%
Inland Schools.	35	5,369	6,078	13.2
Coastal "	57	8,922	9,247	3.6
Total	92	14,291	15,325	7.2

Some of the problems which must be met before the full possibilities of this market can be fully realized were brought out during these demonstrations. Lunchroom managers often indicated that they knew little about cooking fish, or that they objected to its odor while cooking. Many also felt their facilities were inadequate for cooking fish. The demonstrations contributed much toward overcoming these objections for using fish. But their other problems, such as their inability to obtain inexpensive fish, fish of uniform quality from week to week, and delivery schedules and difficulties, are a challenge to the fish dealers. These problems multiply as the distance of the schools increases from the coast. The Massachusetts survey indicates that the greatest potential market for fishery products lies in the inland areas.

Great Lakes Fishery Investigations

SEA LAMPREYS FOUND RESISTANT TO ELECTRICAL CURRENTS: Results of field and laboratory tests directed at developing a lethal electrical device for killing young downstream migrating sea lampreys indicated they were extraordinarily resistant to electrical currents, even at very high voltage. No economical method of electrocuting these young migrants now appears possible, according to an announcement by the Servic's Great Lakes Fishery Investigations which is conducting the sea lamprey investigations. An electro-mechanical device for trapping spawning migrants will be installed and tested in the Ocqueoc River.

PROGRESS REPORT ON OTHER SEA LAMPREY INVESTIGATIONS ACTIVITIES: Fishing operations through ice in Lake Huron this winter yielded data on abundance and degree of

scarring of fish stocks. Personnel conducted experiments also in aquaria and tanks on feeding habits of sea lampreys and studies on specific effects of lamprey attacks on prey species.

Arrangements have been completed with the Indiana and Wisconsin Conservation Departments for operation of weirs and traps in those States during the coming spawning-run season. Indiana will operate one sea-lamprey weir and trap and Wisconsin will operate six devices in cooperation with the Fish and Wildlife Service.

At Marquette, a Service representative periodically inspected the Burkey electric screen and removed the capacitator to the laboratory for winter storage.

The staff have prepared reports on the 1950 sea lamprey control operations and tagging experiments, and on the 1950 survey of spawning streams in the Lake Superior basin. Having examined the 1949 and 1950 samples of migrant sea lampreys for disease and parasites, they are preparing a report on their findings. They are analyzing data on two downstream runs (1949-1950 and 1950-1951) of recently transformed sea lampreys taken in the Carp Lake River.

Gulf Exploratory Fishery Program

"OREGON" TO CONTINUE GROOVED-SHRIMP EXPLORATIONS: In order to continue explorations for commercial concentrations of grooved shrimp, the Service's Gulf exploratory fishing vessel Oregon left Pascagoula February 14 on Cruise No. 7.

On this cruise the vessel will be concerned with the area between Pascagoula and Tampa Bay. Four trawls at 10-fathom intervals will be made off the Mississippi coast through the area now being fished by the commercial fleet. However, emphasis will be placed on the area between Panama City and Tampa in depths between 10 and 250 fathoms.

If suitable bottom can be found, a series of fish-trawl drags will be made in depths over 100 fathoms, and additional work will be carried out on the concentrations of deep-water shrimp. Continued testing of the two types of bottomless trawls will be carried out in areas not suitable for conventional trawling.

The vessel is scheduled to complete this cruise on March 2.

Gulf States Marine Fisheries Commission Meets

A regular meeting of the Gulf States Marine Fisheries Commission was held on January 11-12, 1951, at Brownsville, Texas. The meeting was mainly devoted to discussions of the plans of the Defense Fisheries Administration of the Department of the Interior; defense fisheries programs; the application of technology to a furtherance of the defense effort; shrimp regulations and uniform interstate regulations for the Gulf States; reciprocal fishing agreements; and shrimp imports.

Several resolutions were adopted at the meeting. These were the most important ones:

".....BE IT RESOLVED, That the Gulf States Marine Fisheries Commission go on record as favoring quotas being placed on shrimp importations from all foreign countries, in order to encourage the prosecution of the mentioned offshore shrimp fisheries of the Gulf of Mexico by the American fishing industry, and that copies of this resolution be directed to each of the Congressional Delegates of the five Gulf States.

"RESOLVED, That the Gulf States Marine Fisheries Commission hereby recommends to the Governors and to the Legislatures of the States of Alabama, Florida, Louisiana, Mississippi, and Texas the enactment of laws permitting the several States, members of this compact, to enter into reciprocal fisheries agreements with one another.

".....BE IT RESOLVED, That the Gulf States Marine Fisheries Commission recommends to the Governors and Legislatures of the signatory States that appropriate and adequate funds be made available by enactment of legislation, if necessary, for the purpose of facilitating the research program involving the above designated species (including sea trout, redfish, flounder, mullet, and others) and that such program be administered by the agency of the state charged with conservation of the fishery resources to which the compact pertains and through the research medium representing such agency on the Gulf States Marine Fisheries Commission."

North Atlantic Fishery Investigations

"ALBATROSS III" MADE AVAILABLE TO THE OFFICE OF NAVAL RESEARCH: Because the U. S. Fish and Wildlife Service has been unable to operate the Albatross III, the research vessel for the Service's North Atlantic Fishery Investigations, it has been made available to the Office of Naval Research for a period not to exceed one year, commencing February 1, 1951. The vessel will be used in oceanographic research.

The Service has retained the option of using the vessel half time subsequent to July 1951 for continuing fisheries work in the Northwest Atlantic area, subject to availability of funds and mutual agreement with the Office of Naval Research.

North Pacific Fishery Investigations

NEW FISHERIES RESEARCH PROGRAM FOR COLUMBIA RIVER: A new fisheries research program for the Columbia River has been developed by the Service's Branch of Fishery Biology in response to a request for research plans to match a heavy construction schedule of five new high dams proposed for that river. The new program is being made part of the Interior Department program for development of the resources of the Columbia Basin.

National Defense needs require that this power increase be made now. Fishery interests, however, do not have the knowledge necessary to provide safe passage for anadromous fish past high dams because heretofore the concern has been with low dams (less than 100 feet high) and irrigation diversions.

If funds are appropriated, the expanded research program for maintaining runs of salmon and trout in the Columbia River will attempt to develop general principles which might apply to future dams. Chief among these is the necessity for direction control of fish utilizing both natural and artificial factors, such as current velocity and chemicals. Models to test the most effective design of fishways for up-and-downstream migrants are planned.

Pacific Oceanic Fishery Investigations

"HUGH M. SMITH" COMPLETES HYDROGRAPHIC AND BIOLOGICAL STUDY CRUISE (Cruise No. VIII): In order to continue a hydrographic and biological study of that portion of the Pacific Ocean lying between the Hawaiian and Samoan Islands, the Hugh M. Smith completed a 9,000-mile, 60-day cruise on March 14. This research vessel of the Service's Pacific Oceanic Fishery Investigations on this cruise placed particular emphasis on the region lying between 1° and 7° N. latitude. The temperature, amount of salt, oxygen, chemical nutrients, and the abundance of plankton life were measured at regular intervals, or stations, at thirteen different levels, ranging from the surface to about a depth of 3,700 feet--104 such stations were successfully completed.

From information obtained on previous cruises, this particular area (1° to 7° N. latitude) has been found to be a peculiarly rich area in respect to fish life, plankton, and nutrients required to support such life. One purpose of the cruise was to determine whether this zone shifts north or south with the seasons and how this may affect the abundance of tuna which is associated with the rich area.

In cooperation with the U. S. Weather Bureau, weather observations were made by the ship's staff four times daily. Surface trolling and scouting for tuna were conducted along the route. Fish collections for scientific purpose were made on chosen localities.

Observations of Tuna Schools at Sea: A continuous watch was kept for schools of tuna and associated flocks of birds when running during daylight hours. The position and time sighted, behavior of the school, and its identification, when possible, were recorded for 54 schools seen en route. Of these, 22 were definitely identified as skipjack schools and one as yellowfin. Such observations, combined with those of other cruises, are of value as an index to areas of greater or lesser fish abundance.

Two or three surface lures were trolled almost continuously during daylight hours that the ship was under way. A total of 460 trolling hours yielded relatively few fish (only 25 tuna) and almost all of these were taken close to islands rather than in the open sea.

* * * * *

"JOHN R. MANNING" INVESTIGATES TUNA SEINING IN PHOENIX-LINE ISLANDS AREA (Cruise No. V): An experimental six-week tuna-fishing cruise was completed on March 2 by the John R. Manning, one of the Service's Pacific Oceanic Fishery Investigations vessels. The vessel, outfitted for purse seining tunas, left Honolulu on January 11, 1951. The primary purpose of the cruise was to conduct experimental purse-seining operations around the Phoenix or Line Islands, whichever appeared more promising of results.

Fishing Activities - Phoenix Islands: No purse-seine fish were encountered from January 23 to February 4 in the Phoenix Islands or intervening waters (Canton, Enderbury, Sydney, Hull, and Birnie Islands).

Biological specimens of yellowfin tuna (Neothunnus macropterus) were taken by trolling in the Phoenix Islands, but not as readily as was the experience of the John R. Manning on Cruise III in July and August 1950. The weather was generally good, there being but three days when operations offshore could be termed unworkable.

The gear used was a modified seine (2,000 feet long and 150 feet deep) hung in Honolulu just prior to Cruise V. Two strips of linen webbing were added and the number of 4-oz. leads per fathom of lead line was increased from 32 per fathom to 42 per fathom in the body of the seine (44 leads per fathom were on the first 50 fathoms of the seine). The seine, which was not performing up to expectations, was re-hung on Canton Island by stripping out both strips of linen, placed in the net just above the heavy mesh, and re-lacing and adding 32 fathoms, tapered.

The natives and local inhabitants of long standing say the "season" for tuna in these waters is March, April, May, and June. A brief but active run of tuna was reported near the Phoenix Islands in November and December 1950, however.

The passage to Jarvis from Enderbury took five days. Seas were moderately rough and except for occasional terns and albatrosses, no signs of life were seen. Arriving on Jarvis on February 10, seven yellowfin tuna were taken easily on trolling gear in the lee of the Island. A chumming operation was attempted in the N.W. lee of the island using chopped papio (jack). Wind and seas were too rough to see or stay on chum, and the effort was discontinued.

Night-light fishing under similar difficulties brought small crustacea to the surface, and numbers of opelu (scad mackerel) were seen at not less than 3 fathoms.

Fishing Activities - Line Islands: On February 14 one school of skipjack tuna (Katsuwonus pelamis) was sighted off the S.W. tip of Christmas Island. These fish appeared to be working on feed, were tightly schooled and conservatively estimated in excess of 30 tons. They appeared for a matter of seconds, sounded, and were gone. Intensive scouting resulted in no further signs. In the absence of tuna, two sets were made on awa (milkfish) near the reef on the S.W. tip of Christmas Island. Due to shoal water, the schools had to be cut in setting, and on both occasions the entire school led out.

An excellent school of mixed yellowfin and skipjack tuna, breezing and moving slowly, were encountered off Fanning Island on February 19. The fish were ½ mile offshore, 2 miles east of N. Cape. These tuna were leading shoreward and wind and sea both set to reef. The John R. Manning was unable to make a set. No tuna were seen on Palmyra or Kingman Reef.

Two test hauls were made on February 22 and data were gathered on the time involved for the lead line of the seine to reach a given depth, and the stresses involved in setting and hauling the net. Inspection of the linen webbing used in the seine for this Cruise is encouraging on all counts; handling and use characteristics, lasting qualities, and appearance and strength after preservative treatment. However, based on the experience of the past year, the net will be rebuilt to make it more effective. By making it longer and deeper it is believed that it may be possible to surround the fast-swimming tuna schools of the central Pacific Ocean.

Other Activities: On the southbound and northbound portions of the trip, oceanographic data were taken to establish the strengths and positions of the major ocean currents, as well as other biological data.

* * * * *

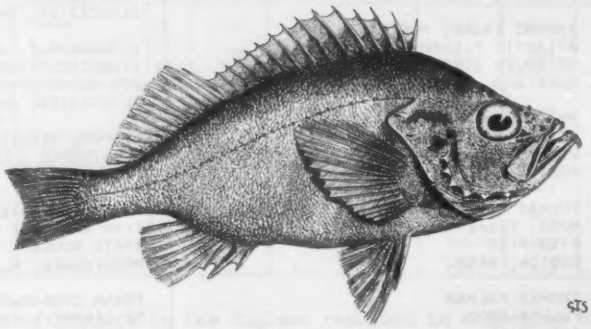
"JOHN R. MANNING" TO CONTINUE INVESTIGATIONS ON TUNA PURSE SEINING (Cruise No. VI): In order to continue investigations on the occurrence of tunas in certain areas in the Central Pacific Ocean and to determine the feasibility of using a standard West Coast tuna purse seine to catch them, the John R. Manning left Honolulu the latter part of March. This vessel of the Service's Pacific Oceanic Fishery Investigations will cruise the waters surrounding the Line Islands from Kingman Reef to Jarvis Island, and is expected to return on or about May 12.

Gear development studies are to be made during the operation of this standard tuna purse seine. Minor variations are to be effected whenever possible on the fishing grounds. Major changes will be recorded for future planning of a purse seine that is better adapted to conditions encountered in the Central Pacific Ocean.

Secondary objectives of the cruise will be to record and collect hydrographical, biological, and meteorological data related to the occurrence of fish.

"Ocean Perch (Rosefish)" Designated by Service as Name for Rosefish

Hereafter the Fish and Wildlife Service will use the term ocean perch (rosefish) to designate that species of fish (Sebastes marinus) which has been listed as rosefish (ocean perch). Ocean perch is taken in large quantities in North Atlantic waters, usually being landed as "redfish." It is marketed in filleted form throughout the United States, almost universally, as ocean perch. It is the principal species landed at Gloucester, Massachusetts, and also at several ports in Maine.



The Service proposed the name rosefish for Sebastes marinus during World War I, when it was practically unknown. It was not taken in quantity until about 1935.

Recently the National Fisheries Institute, at the request of two fishery associations in New England, asked the Service to reconsider the name used for Sebastes marinus in Service publications. The Service recognized several years ago that the name ocean perch was in wide commercial use and at that time changed the official name from rosefish to rosefish (ocean perch). To bring the common name in line with

the prevailing trade practice of the fishing industry, the Service has concurred in the request of National Fisheries Institute and, for the next two years, will use ocean perch (rosefish) in all its publications. At the end of this period, (rosefish) will be omitted and ocean perch alone will be used in its official publications. It is believed that this will allow sufficient time for all interested parties to become familiar with the change-over of names.

U. S. Commissioners of the International Commission for the Northwest Atlantic Fisheries Name Advisors

At their initial meeting held in Boston, Mass., on March 6 and 7, the U. S. Commissioners of the International Commission for the Northwest Atlantic Fisheries named 14 advisors, representing all phases of the North Atlantic fishing industry. Two additional advisors from Maine were appointed at a later date.

The advisory committee was chosen in accordance with Federal law to guide the recently-appointed commissioners in their later discussions with representatives of the other ten nations that signed the treaty that established the commission.

The three U. S. Commissioners, recently appointed by President Truman, attending the session were: Dr. Hilary J. Deason, Chief, Office of Foreign Activities, Fish and Wildlife Service, U. S. Dept. of the Interior, Washington, D. C.; Francis W. Sargent, Director of Marine Fisheries, Massachusetts Department of Conservation, Boston; and Bernhard Knollenberg, author and lawyer of Chester, Conn.

The 14 advisors appointed at the meeting were:

RICHARD E. REED, COMMISSIONER
DEPT. OF SEA AND SHORE FISHERIES
AUGUSTA, MAINE

THOMAS EAGAN, PORT AGENT
ATLANTIC FISHERMEN'S UNION
46 SOUTH STREET
ROCKLAND, MAINE

PATRICK MCHUGH, SEC.-TREAS.
ATLANTIC FISHERMEN'S UNION
206 ESSEX STREET
BOSTON, MASS.

THOMAS D. RICE, EXECUTIVE SECRETARY
MASS. FISHERIES ASSOCIATION
FISH PIER
BOSTON, MASS.

THOMAS FULHAM
FULHAM BROS.
FISH PIER
BOSTON, MASS.

EDMUND O'NEIL, BUSINESS AGENT
SEAFOOD PRODUCERS' ASSOCIATION
12 WILLIAM STREET
NEW BEDFORD, MASS.

GEORGE E. FEENER, PORT AGENT
ATLANTIC FISHERMEN'S UNION
NEW BEDFORD, MASS.

JOHN DEL TORCHIO, DIRECTOR
CAPE ANN FISHERIES
FORT SQUARE
GLOUCESTER, MASS.

ALPHONSUS F. HAYES
ATLANTIC FISHERMEN'S UNION
209 MAINE STREET
GLOUCESTER, MASS.

LEONARD WARNER
PROVIDENCE JOURNAL
PROVIDENCE 2, R. I.

EDWARD C. HAYES, ADMINISTRATOR
FISH AND GAME DIVISION
STATE HOUSE
PROVIDENCE, R. I.

FRANK CYGANOWSKI
52 CAMPBELL STREET
WARREN, R. I.

JOHN B. BINDLOSS
72 WATER STREET
STONINGTON, CONN.

FRANK W. WILKISSON
FRANK W. WILKISSON INC.
16 FULTON FISH MARKET
NEW YORK CITY, N. Y.

The commissioners met with the new group in Boston on March 20 and 21 at which time they discussed questions that may arise at the first meeting of the International Commission to convene in Washington during April.

Wholesale and Retail Prices

WHOLESALE PRICES, FEBRUARY 1951: Although Lent began in February, the demand at wholesale for fresh and fresh-processed fishery products did not come up to expectations, but demand for frozen-processed and canned fishery products was substantially good. From January to February, prices for fresh and processed fishery products dropped, while a substantial rise occurred in the frozen-processed and canned fishery products prices.

The wholesale index for edible fish and shellfish (fresh, frozen, and canned) for February was 111.6 percent of the 1947 average (see table)—1.8 percent lower than the previous month, but still 15.3 percent above February 1950, the Bureau of Labor Statistics of the Department of Labor reports.

Table 1 - Wholesale Average Prices and Indexes of Fish and Shellfish, February 1951, with Comparative Data

GROUP, SUBGROUP, AND ITEM SPECIFICATION	POINT OF PRICING	UNIT	AVERAGE PRICES ($)			INDEXES (1947 = 100)		
			Feb. 1951	Jan. 1951	Feb. 1950	Feb. 1951	Jan. 1951	Feb. 1950
ALL FISH AND SHELLFISH (Fresh, Frozen, and Canned)						111.6	113.7	96.8
Fresh and Frozen Fishery Products:						109.4	112.4	102.5
Drawn, Dressed, or Whole Finfish:						116.8	126.6	109.4
Haddock, large, offshore, drawn, fresh	Boston	lb.	.10	.13	.11	105.7	133.7	110.3
Halibut, Western, 20/80 lbs., dressed, fresh or frozen	New York City	"	.39	.39	.33	113.1	114.1	97.0
Salmon, king, lge. & med., dressed, fresh or frozen	" " "	"	.53	.54	.47	129.9	132.5	115.1
Lake trout, domestic, mostly No. 1, drawn (dressed), fresh	Chicago	"	.57	.57	.49	125.2	125.2	140.2
Whitefish, mostly Lake Superior, drawn (dressed), fresh	"	"	.57	.48	.53	164.0	139.6	180.1
Whitefish, mostly Lake Erie pound net, round, fresh	New York City	"	.51	.46	.57	114.4	104.0	125.2
Yellow pike, mostly Michigan (Lakes Michigan & Huron), round, fresh	" " "	"	.53	.47	.47	122.9	111.2	108.9
Processed, Fresh (Fish and Shellfish):						96.2	98.1	93.0
Fillets, haddock, small, skins on, 20-lb. tins	Boston	lb.	.32	.34	.33	115.9	122.3	117.9
Shrimp, lge. (26-30 count), headless, fresh or frozen	New York City	"	.59	.57	.64	84.4	82.4	92.2
Oysters, shucked, standards	Norfolk area	gal.	4.50	4.80	3.56	110.6	118.2	87.7
Processed, Frozen (Fish and Shellfish):						102.8	99.1	102.4
Fillets: Flounder (yellowtail), skinless, 10-lb. boxes	Boston	lb.	.35	.35	.30	113.0	113.0	96.8
Haddock, small, 10-lb.cello-pack	"	"	.24	.22	.30	106.1	99.8	133.5
Rosefish, 10-lb. cello-pack	"	"	.29	.28	.21	145.0	137.6	106.0
Shrimp, lge. (26-30 count), 5- to 10-lb.bxs.	Chicago	"	.54	.53	.62	78.1	77.0	91.1
Canned Fishery Products:						118.1	115.7	88.2
Salmon, pink, No. 1 tall (16 oz.), 48 cans per case	Seattle	case	24.62	24.03	14.53	160.5	156.7	94.7
Tuna, light meat, solid pack, No. ½ tuna (7 oz.), 48 cans per case	Los Angeles	"	15.00	14.90	14.25	97.6	96.9	92.7
Sardines (pilchards), California, tomato pack, No. 1 oval (15 oz.), 48 cans per case	" "	"	6.75	6.62	5.60	75.5	74.1	61.5
Sardines, Maine, keyless oil, No. ¼ drawn (3¼ oz.), 100 cans per case	New York City	"	6.47	6.20	7.50	63.4	60.8	73.6

Continued heavy landings of haddock in New England resulted in a decline of 7.7 percent in the drawn, dressed, or whole fin fish subgroup from January to February, but this index was still 6.8 percent higher than in February 1950. From January to February this year, average wholesale prices for large drawn offshore haddock dropped 21.0 percent and they were 4.2 percent lower than in February a year earlier. However, the decline in salt-water prices was offset to some degree by substantial increases in the prices quoted for whitefish and yellow pike. Fresh-water fish production during the month was at a low level due to severe weather conditions which prevailed the early part of February in the Great Lakes area.

The fresh-processed fishery products subgroup index this February declined 1.9 percent as compared to January, but it was still 3.4 percent higher than in February 1950. Prices quoted for fresh haddock fillets during the month were considerably lower than in January and 1.7 percent lower than in February a year earlier. Shucked oysters also were quoted at lower prices during the month. Fresh headless shrimp prices rose, but they were still 8.5 percent below February 1950.

Although cold storage stocks were ample, the February index for processed frozen fish and shellfish increased 3.7 percent over January this year and was 0.4 percent above February 1950. In this subgroup, the increases occurred mainly in frozen ocean perch fillets (holdings of which are below a year earlier) and haddock fillets (in spite of heavy New England landings of haddock and large cold-storage holdings of these fillets). Shrimp prices also rose slightly in February this year. Compared with the corresponding month a year earlier, February prices for frozen haddock fillets and frozen shrimp continued substantially lower, while frozen ocean perch (rosefish) fillets and flounder fillets sold at substantially higher prices. The lack of demand during Lent for fresh and fresh-processed fishery products and the good demand reported for frozen-processed fishery products would seem to indicate a consumer preference for frozen-processed fishery products.

Canned fishery products prices continued their upward spiral in February. The month's index for this subgroup was 2.1 percent higher than January, and 33.9 percent greater than in February 1950. Higher prices were reported during February for each canned product under this subgroup. Compared with February 1950, quotations this February were 69.5 percent higher for pink salmon; 22.8 percent higher for California sardines; 5.3 percent higher for tuna; but 13.9 percent lower for Maine sardines.

RETAIL PRICES, FEBRUARY 1951: Retail prices of fishery purchases by moderate-income urban families continued their upward trend from mid-January to mid-February 1951 (table 2), according to the Bureau of Labor Statistics, U. S. Department of Labor. However, the increase for all foods was greater than that for fishery products.

Table 2 - Adjusted 1/ Retail Price Indexes for Foods and Fishery Products, February 15, 1951, with Comparative Data

Item	Base	INDEXES		
		Feb.15,1951	Jan.15,1951	Feb.15,1950
All foods	1935-39 = 100	226.0	221.9	194.9
All fish and shellfish (fresh, frozen, & canned) ..	do	347.8	345.3	294.1
Fresh and frozen fish	1938-39 = 100	283.7	283.0	259.1
Canned salmon: pink	do	501.1	493.7	365.4

1/ INCLUDES ADJUSTMENTS TO IMPROVE THE CONSUMERS' PRICE INDEX AND TO MAKE IT A MORE ACCURATE MEASURE OF PRICE CHANGES IN THE MOBILIZATION PERIOD (SEE COMMERCIAL FISHERIES REVIEW, MARCH 1951, P. 21).

Fish and shellfish (fresh, frozen, and canned) retail prices in mid-February were 0.7 percent above mid-January averages, or scarcely one-half of the percentage change for all foods. The adjusted fish and shellfish index was 347.8 percent of the 1935-39 average--16.0 percent above the mid-February 1950 index. This increase can be attributed mainly to the higher canned fish prices.

The mid-February index for fresh and frozen fishery products rose 0.2 percent above the mid-January quotations, and represents a gain of 9.5 percent above mid-February of the previous year.

Canned pink salmon continued its upward movement between January-February 1951 with a reported index of 501.1 percent of the 1938-39 base. This is an increase of 1.5 percent over the previous month and 37.1 percent higher than mid-February 1950.

ECA Procurement Authorizations for Fishery Products

There were no procurement and reimbursement authorizations for fishery products and byproducts (edible and inedible) announced by the Economic Cooperation Administration during March this year.

ECA procurement authorizations for fishery products and byproducts for the period April 1, 1948, through March 31, 1951, totaled $29,783,000 ($17,094,000 for edible fishery products; $11,149,000 for fish and whale oils; and $1,540,000 for fish meal). Also, during the entire period $220,000 was authorized under the Far Eastern Aid Programs for use by Korea for the purchase of fish and whale oils from the United States and Possessions.

In addition to items generally classified and included in the above category, there was an authorization of $20,000 during March for the purchase of pearl essence by Austria from the United States and Possessions.

CALIFORNIA SARDINE AND NOODLE CASSEROLE

1 15-OUNCE CAN CALIFORNIA SARDINES
3 TABLESPOONS BUTTER OR OTHER FAT
3 TABLESPOONS GREEN PEPPER, CHOPPED
3 TABLESPOONS ONION, CHOPPED
1/4 CUP SIFTED FLOUR
1/8 TEASPOON PEPPER
1/2 TEASPOON SALT
1-1/2 CUPS MILK
1/2 CUP GRATED CHEESE
1-1/2 CUPS COOKED NOODLES
1/2 CUP DRY BREAD CRUMBS
2 TABLESPOONS BUTTER OR OTHER FAT, MELTED

Drain and flake sardines. In top of double boiler melt the fat, add green pepper and onion, cook until tender. Blend in flour and seasonings, gradually add milk, and cook until thick, stirring constantly. Add cheese and continue cooking until cheese melts. Combine sardines, noodles, and sauce. Pour in a greased casserole and top with buttered crumbs. Bake in a moderate oven 350° F. for 30 minutes or until crumbs brown. Serves 6.

A Fish and Wildlife Service tested recipe. This is one in the series of recipes using fishery products tested and developed in the Service's test kitchens.

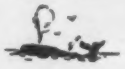
International

ANTARCTIC WHALING SEASON ENDS MARCH 9: The pelagic, or open-sea, catch of baleen whales in the Antarctic shall cease on March 9, 1951, at 12 p.m., according to instructions given by the International Bureau of Whaling Statistics, Sandefjord, Norway, and reported by a radiogram dated February 21 received from the Bureau by the U. S. Fish and Wildlife Service.

The message constitutes a forecast that the maximum quota of 16,000 blue-whale units will have been taken by the above closing date. As of February 17, 1951, the total catch was 12,636 blue-whale units, exclusive of the catch of the Soviet Union's expedition for the preceding week. The notification to cease whaling was in pursuance of paragraph 8, subparagraph (d) of the Schedule annexed to the International Convention for the Regulation of Whaling signed at Washington, December 2, 1946, which is as follows (as amended by the International Whaling Commission July 20, 1950 at its second meeting in Oslo, Norway):

> "(d) If it should appear that the maximum catch of whales permitted by subparagraph (a) of this paragraph may be reached before April 1 of any year, the Commission, or such other body as the Commission may designate, shall determine, on the basis of data provided, the date on which the maximum catch of whales shall be deemed to have been reached and shall notify each Contracting Government of that date not less than two weeks in advance thereof. The taking of baleen whales by whale catchers attached to factory ships shall be illegal in any waters south of 40 degrees South latitude after midnight of the date so determined."

The 1949-50 pelagic season, originally planned to extend from December 22 to April 7, was closed March 15, 1950. Consequently, the 1950-51 season will be 6 days shorter than was the previous one. This probably reflects the fact that there are 19 expeditions operating in 1950-51 whereas there were 18 in 1949-50.



British Malaya

CANNED SARDINES AND HERRING IMPORTS PERMITTED: Imports of canned herring and canned sardines against hard-currency payments are permitted by an amendment to the Malayan Import Guide, according to a March 1 American consular dispatch from Singapore. This amendment became effective February 24.

Canada

PER CAPITA CONSUMPTION OF FISHERY PRODUCTS, 1949: Canada's annual per capita consumption of fishery products dropped from 12.83 pounds (edible weight) in 1948 to 12.69 pounds (edible weight) in 1949, according to preliminary data reported in the January 1951 Trade News of the Canadian Fisheries Department. However, consumption of fresh and frozen fish is gradually increasing in Canada, the annual total having risen from 73 million pounds in 1947 to 77 million in the following year and 84 million in 1949. The increase is partly attributable to the growth in population.

Canadian Per Capita Consumption (Edible Weight) of Fishery Products (By Type of Product)

Type of Product	1949	1948	1947
	lbs.	lbs.	lbs.
Fresh and Frozen:			
Sea fish, whole or dressed	2.81	2.88	3.05
Sea fish, filleted	2.10	1.86	1.52
Fresh-water fish, whole or dressed	0.69	0.73	0.77
Fresh-water fish, filleted	0.17	0.18	0.20
Shellfish	0.40	0.30	0.24
Total	6.17	5.95	5.78
Cured:			
Smoked	0.67	0.82	0.78
Pickled	0.41	0.45	0.42
Salted and dried	0.93	0.92	0.80
Total	2.01	2.19	2.00
Canned:			
Sea fish	4.27	4.47	4.24
Shellfish	0.24	0.22	0.24
Total	4.51	4.69	4.48
Grand Total	12.69	12.83	12.26

Fresh and Frozen Fillets: The chief product which has tempted the Canadian housewife to increase her fish purchases is the fresh and frozen fillet, total annual consumption of which has grown from 22 million pounds in 1947 to 26 million in 1948 and 31 million in 1949, a truly remarkable expansion.

For the second consecutive year consumption of sea-fish fillets increased substantially during 1949. Average monthly consumption, which amounted to 1.9 million pounds in 1947, grew to 2.2 million in 1948 and 2.6 million in 1949.

This expanding market has encouraged the industry to send out more draggers for fish suitable for filleting and to invest in more equipment for fillet production. This in turn makes it possible to develop the market further and leads one to expect continuing increases in fillet consumption. Cod and haddock made up 70 percent of the 31 million pounds of fillets eaten by Canadians in 1949, about 40 percent being cod and 30 percent haddock. Indications are that demand for haddock will soon catch up with that for cod, since consumption of haddock fillets in 1949 was 23 percent higher than in 1948 and cod only six percent higher although supplies of the latter were ample.

Fresh and Frozen Whole or Dressed Salt-water Fish: Increased demand is not entirely confined to fillets. Consumers bought a million more pounds of unfilleted sea fish in 1949 than in 1948. The total was 38 million pounds, including fresh and frozen sea fish marketed whole or dressed. Salmon was by far the most important item in this total, the figure being 16 million pounds, over 40 percent of all the "whole or dressed" category. In 1948 the figure was 12 million pounds, or 32 percent of the category. Domestic marketings of halibut, Atlantic cod, herring, mackerel, and haddock exceeded two million pounds each in this category. Other species contributed less than five million pounds altogether.

Fresh-water Fish: Canadian consumption of fresh-water fish was about the same in 1949 as in the previous year, the totals being 22 million pounds of round or

dressed inland fish and well over two million pounds of filleted inland fish. Whitefish, yellow pike (pickerel), pickerel (pike), ciscoes, and lake trout were the most popular varieties.

Shellfish: Canadian consumption of shellfish also expanded in 1949 but most of the increase was in shelled oysters imported from the United States. Altogether, the total consumption of shellfish in Canada during 1949 was 1.5 million pounds greater than in 1948; the figure was 5.5 million pounds, as against about 4 million in the previous year.

Canned Fish: About 10 percent more canned salmon was bought by Canadian consumers in 1949 than in 1948, partly no doubt as the result of an advertising campaign to promote domestic consumption.

Since year-end stocks of canned fish can only be estimated, precise figures are not available but total domestic sales of canned salmon amounted to about 850,000 cases, or 41 million pounds, in 1949; and accounted for about 70 percent of all canned fish sold. In the previous year about 66 percent was salmon.

Production of canned sardines dropped from 850,000 cases (100: 3¼ oz.) in 1948 to only 600,000 cases in 1949 and, although export demand also dropped, a much smaller amount remained for Canadian consumers. As far as can be estimated from available sources of information only about 4.5 million pounds were marketed in Canada, about half as much as the estimate (possibly a little high) for the previous year.

Chief among other canned fish items bought by the Canadian housewife are herring and chicken haddies. Consumption of these products has not changed significantly in recent years. The 1948 surplus of chicken haddies was, however, bought by the Fisheries Prices Support Board and distributed to charities and public institutions in 1949, somewhat raising that year's consumption of this item.

The Canadian market also absorbed 13 percent more canned lobsters and clams in 1949 than in 1948, the total being over three million pounds. As far as clams are concerned, however, both the crop and the pack were abnormally low in 1948 and the higher figure for 1949 represents only a return to normal. Almost the entire pack of clams is consumed in Canada.

Cured Fish: Cured fish is relatively unimportant in the Canadian diet when compared with fresh, frozen, and canned products.

Preliminary figures for 1949 indicate that consumption of smoked fish dropped 1.5 million pounds below the figure for the previous year. The total was about 9 million pounds, made up largely of kippered herring, finnan haddies, and smoked fillets of cod.

Consumption of salted fish, on the other hand, advanced from less than 12 million pounds in 1948 to over 12.5 million in 1949. As already mentioned, this does not include substantial quantities salted by the fishermen and consumed in fishing communities without entering regular commercial channels. A recent survey in Newfoundland, of which the compilation is not yet finished, shows that salted fish is an important item in fishermen's diet in that province. The same is probably true all along the East Coast. The same is true of pickled fish. Commercial sales of this product have varied little in recent years. The 1949 total was 5.5 million pounds.

NOTE: FIGURES FOR 1949 INCLUDE NEWFOUNDLAND, WHILE THOSE FOR THE PREVIOUS YEARS DO NOT. THIS DOES NOT SIGNIFICANTLY ALTER THE PICTURE FOR CONSUMPTION, SINCE NEWFOUNDLAND'S POPULATION IS RELATIVELY SMALL: ABOUT 348,000 IN 1949. PER CAPITA CONSUMPTION IN THE TENTH

PROVINCE IS, HOWEVER, BELIEVED TO BE HEAVIER THAN ELSEWHERE IN CANADA, SINCE FISH IS READILY AVAILABLE EVERYWHERE IN NEWFOUNDLAND AND TRANSPORTATION PROBLEMS LIMIT THE SUPPLY OF OTHER PROTEIN FOODS IN MANY AREAS. IT MUST FURTHER BE REMEMBERED THAT STATISTICS ARE BASED ONLY ON SUPPLIES WHICH ENTER NORMAL COMMERCIAL CHANNELS. THE AMOUNT OF THE FISHERMAN'S CATCH WHICH IS EATEN BY HIS OWN FAMILY AND THE AMOUNT HE PEDDLES IN HIS OWN NEIGHBORHOOD ARE NOT FULLY COVERED BY THE STATISTICS.

* * * * *

PROCEDURE FOR INSPECTION OF CANNED FISH EXPORTS: The Canadian Government has notified the French Embassy that the Canadian Department of Fisheries maintains an inspection service for canned fish in accordance with Federal regulations and has requested that the Department's Inspection Service be designated as the agency for certifying canned fish exports to France. The Department will provide an inspection certificate, which will accompany shipments, in evidence of the condition and quality of the fish, reports a February 7 American consular dispatch from Ottawa.

To date, the Canadian Government has not been notified whether this procedure meets with the French Government's approval. The Canadians point out that they have been using this procedure in connection with canned fish exports to other countries requiring certificates and that it has proved acceptable and workable.

* * * * *

NEWFOUNDLAND FISHERIES DEVELOPMENT COMMITTEE ESTABLISHED: The creation of a Fisheries Development Committee to formulate a development program for the Newfoundland inshore and offshore fisheries was announced by the Newfoundland Government on January 27, according to the January 1951 Trade News of the Canadian Fisheries Department.

The functions of the Committee will be: (1) to examine the fisheries resources available to Newfoundland with a view towards the fullest utilization of known resources and the discovery and development of others; (2) to examine the economics of existing methods of fishing and other methods which may be applicable; (3) to examine the economics of existing methods of processing and other methods which may be applicable.

The Committee's purpose is increased utilization of fishery resources through methods of fishing and processing based on sound scientific, economic, and social considerations, and in particular, recommending a program capable of implementation by both the Federal and provincial governments and those engaged in the fishing industry.

In its work the Committee will investigate all possible means of improving the productivity of the Newfoundland fisheries. Research by the Fisheries Research Board of Canada already has resulted in new stocks of rosefish, capelin, American plaice, and cod being found off Newfoundland's shores. Experimental long-lining operations off Bonavista by the Board also has been carried out with promising results. These experiments were conducted to determine whether larger boats and better equipment could improve the production by extending the range of operations.

It is expected also that the Committee will investigate the possibility of accelerating the rate of application of technological research developed by the Board. This involves latest methods of handling, processing, and distributing fishery products, and the production of new byproducts.

Chile

CANNED FISH PRODUCTION, 1950: There was an increase of almost 25 percent in the volume of fish canned and processed in Chile in 1950, the Director of Hunting and Fishing reports. Total canned fish production amounted to 35,453 metric tons.

BELGIUM TRAWLERS TO OPERATE IN CHILEAN WATERS: The Director of Hunting and Fishing announced that a fleet of seven fishing trawlers from Belgium would arrive in Chile in March to operate in Chilean waters, according to a March 8 American Embassy dispatch from Santiago.

Cuba

SPONGE INDUSTRY FACES DIFFICULTIES: Overfishing and a blight present new difficulties for the Cuban sheepswool sponge industry, according to a March 7 American Legation dispatch. Of the three prosperous exporting companies operating a decade ago, only one exporting firm remains. One exporter complained that Cuban sponges were being discriminated against by the United States duty of 12 percent ad valorem while Mediterranean sponges (similar to the Cuban sheepswool) are given preferential treatment by being assessed a 7.5 percent duty. The Cuban sponge interests are looking to their Government to aid them in rehabilitating their industry by transplanting and propagating desirable varieties of sponges, and to the United States for a readjustment of tariffs.

* * * * *

PURCHASES BOATS FOR SHRIMP FISHING: A Cuban fishing outfitter recently acquired in Florida two motor-equipped sailboats (the Kadholvsky and the John Panagis). Reports indicate that these boats will be used for fishing shrimp, a new Cuban venture, according to a March 5 American consular dispatch from Havana.

* * * * *

FISH REFRIGERATION PLANTS TO BE CONSTRUCTED: Bids for the construction of three fish refrigeration plants have been requested by the National Development Commission of Cuba in advertisements published in the Havana press. These plants will be erected at Nueva Gerona (Isle of Pines), Santa Cruz del Sur, and Nuevitas (Camaguey), according to a March 1 American consular dispatch from Havana.

Denmark

NEW GERMAN-DUTCH TYPE TRAWL TESTED: Trawling gear in European countries is being improved steadily, according to recent reports published in the February 14 issue of Fiskaren, a Norwegian fishery periodical. A new German-Dutch type trawl constructed in Esbjerg, Denmark, has been tested with good results. Danish fishermen who watched the tests were enthusiastic over its performance. No details on the construction or operation of the gear were given.

Ecuador

NEW FISHERIES LAW INCREASES FEES FOR AMERICAN VESSELS: The new Ecuadoran Presidential Decree on Fish and Fisheries increases the fees for American fishing vessels, according to an American consulate dispatch from Quito dated March 15. The new Decree, published in the Registro Oficial, No. 747, dated February 23, 1951, is Ecuadoran law until the next session of the Ecuadoran Congress in August 1951. If the Congress does not amend the Decree during that session, it then becomes a permanent Ecuadoran law. It is not believed that there will be any attempt to alter the present Decree in the next Congress.

There is no prohibition of tuna purse seining. In Article 2, the territorial waters of Ecuador are claimed to extend from the lowest tide to a distance of 12 nautical miles from the mainland coast; also, concerning the Galapagos Islands, that territorial waters extend similarly for 12 miles, measured as a unit from the furthest points of the exterior islands, rather than around each island.

In Article 23 the system of issuing licenses by radio to fishing vessels at sea is authorized. In Article 28 the fees given show that permits from California, valid for 100 days, now are as follows: Registration for tuna, swordfish, and shark, $200.00, and for codfish, $100.00; additional permit fee per each net ton of registry for tuna and shark, $12.00, for swordfish, $20.00, and for codfish, $8.00.

France

SALT-WATER FISH CATCH, 1949-50: French landings of fresh sea fish in the period July 1, 1949, to June 30, 1950, totaled 289,055 metric tons (exclusive of crustaceans and molluscs), according to a January 16 American Embassy dispatch from Paris. Prewar average landings were about 282,000 tons.

Total fish supplies (exclusive of the domestic production of fresh-water fish for which data are not available) reached 320,987 tons, including net imports of 31,932 tons. It is believed that fish production in 1950-51 will be somewhat lower than in 1949-50, chiefly because of marketing difficulties and unsatisfactory prices.

* * * * *

CANNED FISHERY PRODUCTS IMPORTS FROM U. S. SUSPENDED: The French customs authorities have been requested to suspend entry into France of canned fish, crustaceans, and other marine animals beginning on April 1, 1951, according to a note addressed to the U. S. Department of State from the Embassy of France in the United States. The order was issued by the French Minister of the Merchant Marine.

Apparently this action was taken because no agency has yet been selected to issue inspection certificates for shipments from the United States. Efforts are being made to select such an agency. These certificates have been required since January 1, 1951, to accompany imports into France of the products mentioned. The regulations which require these inspection certificates were issued in a decree of October 5, 1949, published in the Journal Officiel of October 12, 1949.

French Morocco

FORBIDS DRAGGER FISHING: The use of drag nets fished by one or more boats is forbidden during a period of three years in the territorial waters of the French Zone of the Sherifian Empire, a December 13 American consular dispatch from Rabat reports. The decree (dated September 2, 1950) was promulgated in order to protect the country's fishing grounds, and became effective on November 1, 1950.

The area in which this type of fishing is prohibited is designated by the decree as lying between the lighthouse of Mehdia and the lighthouse of Fedala; and from the parallel of the lighthouse at Tefelnet and the parallel of the marabout Sidi Ouassai, to the south of the outlet of the River Massa.

Not affected is gear fished "by hand, along the bank, near the shore, or on board a stationary boat, as well as those which sink to the bottom and are immediately pulled to the surface again from the land or at sea, such as seines."

German Federal Republic

PILCHARDS CAUGHT BY GERMAN TRAWLERS: After the German herring season ended in December, German trawlers continued looking for herring. Going deep into the English Channel, the trawlers made a 14-day voyage and were able to catch herring. Also, for the first time known, they netted pilchards---a fish unknown to these fishermen who mistook them for anchovies, a January 25 American consular dispatch from Bremerhaven reports.

Two reasons are given for the catch of pilchards: (1) the fish apparently appeared farther north than heretofore, and (2) German trawlers in previous years generally went farther south to fish for herring. The pilchards were well received at Bremerhaven and sold at auction at the same price as the herring.

Iceland

FISH CATCH, UTILIZATION, AND EXPORTS, 1950: Production: Fish production for 1950 in Iceland was slightly below that of 1949, according to a February 23 report from the American Legation at Reykjavik. The decline in total catch continues the trend of the past few years, with 1950 production 21 percent below that of 1948 (table 1). The difference between the catch in the two years was approximately equal to the decrease in herring. A detailed description of the fish catch by species in 1950 and 1949 is included in table 2.

The 1950 catch of demersal fish would no doubt have exceeded that of 1949, if the nation's trawler fleet had not been tied up by a seamen's dispute which lasted from July 1 until early November. The dispute prevented the trawlers from delivering iced fish to West Germany during the normally favorable period after August 1. Other trawlers would have delivered fish to local reduction plants for processing into meal and oil, or to local salting plants, if they had not been laid up by the dispute.

Table 1 - Icelandic Fish Production, 1948-50

Year	Demersal Fish[1]	Herring[2]	Total
	..... metric tons		
1950	262,585	60,441	323,027
1949	265,915	71,407	337,322
1948	259,087	150,122	409,208

1/ Drawn fish; 1950 data includes 63,321 tons of whole fish delivered to reducing plants.
2/ Whole fish.

Considering the loss occasioned by the trawler dispute, the 1950 catch compared favorably with 1949. Cod accounted for 58 percent of the total catch of demersal fish in 1950 as compared to 62 percent in 1949 (table 2).

Table 2 - Icelandic Fish Catch by Species, 1949-50

Species	1950	1949	Species	1950	1949
	(metric tons)			(metric tons)	
Plaice	2,265	3,721	Haddock	15,934	18,812
Lemon sole	627	897	Ling	2,729	4,495
Witch	52	408	Wolffish (catfish)	4,542	11,062
Megrim	28	101	Ocean perch (rosefish)	6,634	26,927
Dab	11	72	Coalfish	12,508	32,417
Halibut	736	1,529	Cusk (tusk)	1,255	1,083
Skate	102	82	Herring	60,441	71,407
Cod	151,839	164,311	Unspecified	63,321[1]	-
			Grand Total	323,027	337,322

[1] Consisted mainly of rosefish and some coalfish delivered to reduction plants.

The most interesting development in the demersal fisheries in 1950 was the exploitation of ocean perch (rosefish) fisheries. In view of the firm foreign markets for meal and oil, there was a good demand for ocean perch at the reduction plants. A few trawlers received special authorization to engage in ocean perch fisheries off the north coast during the trawler seamen's strike, and they were joined by many other trawlers after the dispute was settled in November. The fish delivered by the trawlers to the reduction plants were not sorted by species, accounting for the "unspecified" category in table 2. It is known that most of the fish in this category (probably as much as three-fourths of the total) were ocean perch, the remainder consisting principally of coalfish.

The 1950 principal herring fisheries, which take place off the north coast during the summer months, were most disappointing, the catch amounting only to 32,000 tons. However, the year's total herring catch was raised to 60,000 tons as the result of an unexpected run of herring during the fall and early winter months off the southwest coast.

Utilization: There were marked changes in 1950 in the utilization of Iceland's fish catch (table 3).

Iceland's fishing industry was in a state of flux and conversion in 1950, as a result of the collapse of the previously lucrative markets for iced and frozen fish. In view of the loss of foreign markets for iced fish and frozen fish, the local fishing industry turned to salting the catch. More fish was delivered for salting than for any other method of preparation. Salt-fish operations thus once again became a predominant feature of

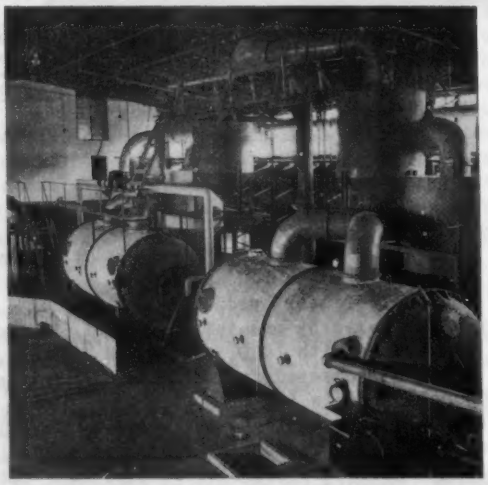


FIGURE 1 - IN FAXA BAY, SOUTHWESTERN ICELAND, A LARGE AND COMPLETELY MODERN HERRING- AND FISH-PROCESSING PLANT HAS RECENTLY BEEN CONSTRUCTED BY THE AID OF SUBSTANTIAL ECA FINANCING. THE METHODS USED IN THIS PLANT FOR PRODUCING FISH MEAL AND EDIBLE OILS ARE ENTIRELY NEW. SHOWN ARE SOME OF THE NEW ECA-BOUGHT MACHINERY AND EQUIPMENT (TWO EVAPORATORS USED IN DEHYDRATING WHOLE FISH UNDER VACUUM) IN THIS LARGE AND MODERN PLANT. (SEE COMMERCIAL FISHERIES REVIEW, DECEMBER 1950, PP. 41-5.)

the local fishing industry. Salt-fish production had been the most valuable source of export revenue before World War II, but decreased very sharply during and immediately after the war when iced and frozen fish were in greater demand. Production of salt-fish (wet-salted basis) amounted to 49,671 metric tons in 1950, as against only 21,200 tons in 1949. In the same years, production of frozen fish decreased from 29,853 tons (actual weight of product) to 19,810 tons, while iced fish shipments dropped to less than one-fourth of the 1949 level. In 1950, a total of 57,041 tons of fish were utilized for frozen fish, compared to 77,872 tons in 1949 (table 4).

Table 3 - Utilization of Iceland's Fish Catch, 1949-50

	1950	1949
Utilization:	(metric tons)	
Iced	32,178[1]	142,227
Frozen (except for bait)	57,041	77,872
Dried (for stockfish)	494	59
Canned	85[2]	271
Salted:		
Demersal fish	99,343	42,362
Herring	27,257	17,387
Domestic consumption	2,110	3,191
Frozen for bait (herring)	7,272	7,950
To reduction plants:		
Demersal fish	71,448[3]	[4]
Herring	25,799	46,003
Total	323,027	337,322

1/Includes 103 tons of herring.
2/Includes 11 tons of herring.
3/Only whole fish delivered to plants are shown; in addition, reduction plants process offal of fish delivered to freezing plants.
4/No whole fish; only offal processed in 1949.

Another important change in the processing of the local fish catch in 1950 was the considerable quantity of demersal fish, chiefly ocean perch, delivered to the reduction plants prompted by the strong demand abroad for fish meal and oil. The delivery of whole fish to the reduction plants for the manufacture of meal and oil will continue to be a feature of local fishing operations so long as the demand for meal and oil continues. It may be noted that in addition to the whole ocean perch delivered to the reduction plants, the plants also handle considerable quantities of fish offal removed from fish delivered to the freezing plants. In 1949, the reduction plants did not handle any whole demersal fish but depended entirely on offal for raw material (excluding herring, which are normally delivered whole to plants in considerable quantities each year).

Table 4 - Amount of Icelandic Catch Utilized to Produce Frozen Fish (By Species), 1950

Species	Quantity
	Metric Tons
Plaice	1,631
Lemon sole	546
Witch	33
Megrim	14
Dab	1
Halibut	459
Skate	7
Cod	37,645
Haddock	7,709
Ling	13
Catfish	3,250
Ocean perch (rosefish)	5,644
Coalfish	32
Cusk (tusk)	57
Total - 1950	57,041
Total - 1949	77,872

Exports: Although the volume of Icelandic fishery products exports decreased by one-third in 1950 in comparison with 1949, the value of exports increased in a similar proportion (table 5). The rise in value is attributable to increased local currency prices resulting from the two substantial devaluations of September 1949 and March 1950. However, the percentage of the nation's total export value accounted for by fishery products decreased from 98.1 to 90.5 percent in 1950.

Despite the rise in export values, the volume of exports in 1950 was substantially under the 1949 level. The decrease in tonnage was very sharp in iced and frozen fish, and was only partially counterbalanced by an increase in salt-fish exports. The increase in the value of exports resulted primarily from the two successive devaluations of Icelandic currency, which increased local kronur receipts despite falling markets abroad. However, in the case of a few commodities, principally cod-liver oil, rising foreign prices contributed to the increase in total export value.

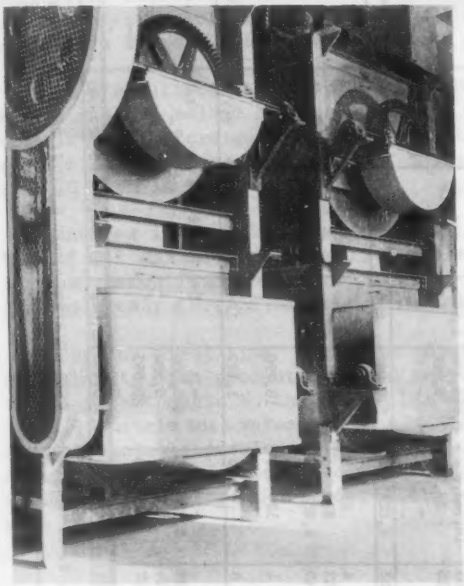


FIGURE 2 - COOKERS FOR COOKING HERRING MEAL IN NEW FISH-PROCESSING FACTORY.

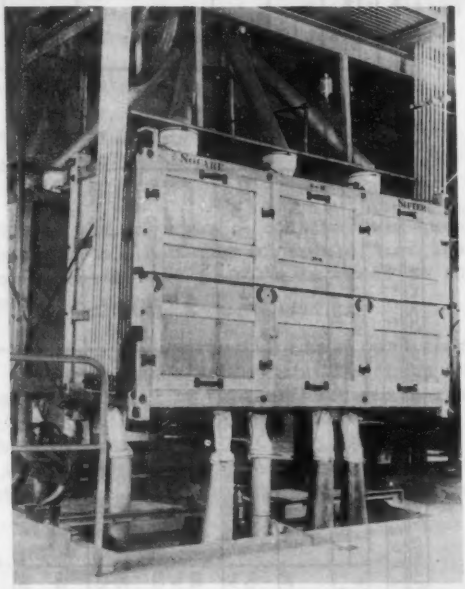


FIGURE 3 - AFTER THE MEAL HAS BEEN COOKED AND DRIED IT IS PUT THROUGH SIFTERS BEFORE BEING PACKED INTO SACKS FOR SHIPMENT.

A considerable change took place in the pattern of fishery products exported in 1950. This resulted from the collapse of foreign markets for iced and frozen fish. Whereas Iceland exported almost 120,000 tons of iced fish in 1949 to West Germany and the United Kingdom, exports in 1950 dropped to 28,000 tons. Only slightly more than one-half as much frozen fish was exported in 1950 as in 1949 (19,000 tons against 36,000 tons). An interesting development in frozen fish sales was the emergence of the United States as the predominant purchaser of Icelandic frozen fillets (table 5). Exports to the United States increased from 2,480 tons in 1949 to 7,409 tons in 1950, and the value of these exports increased almost sevenfold. Exports to the United States accounted for 39 percent of Iceland's frozen fish shipments by volume, and 44 percent by value. Another significant change in the frozen fish market was the almost complete collapse of purchases by the United Kingdom, which imported from Iceland less than 2,000 tons in 1950 as against more than 18,000 tons in 1949.

The most significant development in the export field in 1950 was the large increase in shipments of salt fish. The considerable increase of shipments in 1950, together with the collapse of markets for iced and frozen fish, made salt fish Iceland's leading export commodity. Shipments of uncured (wet) salt fish increased

Table 5 - Iceland's Export of Fishery Products and Quantity Exported to the United States, 1950

Product	TOTAL EXPORTS						TOTAL EXPORTS TO UNITED STATES					
	1950			1949			1950			1949		
	Metric Tons	Value Kronur	Value U.S. $	Metric Tons	Value Kronur	Value U.S. $	Metric Tons	Value Kronur	Value U.S. $	Metric Tons	Value Kronur	Value U.S. $
Fresh Fish:												
Herring	104	84,109	5,804	-	-	-	-	-	-	-	-	-
Other	28,380	24,187,912	1,668,966	119,776	75,676,350	10,594,689	-	-	-	-	-	-
Frozen Fish:												
Herring	1,451	2,880,232	198,736	-307	255,369	35,752	46	110,393	7,617	-	-	-
Other	18,765	80,324,021	5,542,357	36,197	95,195,387	13,327,354	7,409	35,210,381	2,429,516	2,480	5,353,861	749,540
Salted Fish:												
Herring	18,102	54,664,802	3,771,871	10,123	20,758,241	2,906,154	344	1,271,274	87,718	1,360	3,526,621	493,727
Other, cured	4,024	22,507,632	1,553,027	297	952,247	133,315	2	14,179	978	-	-	-
" uncured	27,129	64,471,416	4,448,528	15,668	30,365,413	4,251,158	613	1,495,477	103,188	-	-	-
" pressed	56	161,060	11,113	-	-	-	-	-	-	-	-	-
" in bbls.	59	194,006	13,386	29	54,088	7,572	-	-	-	2	3,376	473
" flaps	792	1,642,835	113,356	2,182	5,831,246	816,374	1/	981	68	-	-	-
Fish Meal:												
Herring	2,146	4,106,775	283,367	558	545,668	76,393	-	-	-	100	116,250	16,275
Ocean perch	6,030	13,568,218	936,207	-	-	-	-	-	-	-	-	-
Other	8,620	19,511,823	1,346,316	6,392	7,264,542	1,017,036	100	148,960	10,278	-	-	-
Oil:												
Herring	5,807	21,504,853	1,483,835	7,099	16,922,216	2,369,110	-	-	-	-	-	-
Cod liver	11,519	41,934,513	2,893,481	5,805	18,743,802	2,624,132	1,942	8,734,459	602,678	2,441	7,865,777	1,101,209
Shark	41	370,854	25,589	13	37,798	5,292	-	-	-	13	37,798	5,292
Coalfish	342	1,662,953	114,744	-	-	-	-	-	-	-	-	-
Ocean perch	1,504	6,894,603	475,728	-	-	-	-	-	-	-	-	-
Canned Fish	383	2,001,038	138,072	423	1,534,623	214,847	226	1,186,990	81,902	223	687,918	96,308
Miscellaneous:												
Dried fish	94	482,057	33,262	4	21,515	3,012	2/	2,151	148	-	-	-
Roe, frozen	69	215,371	14,861	162	228,033	31,925	-	-	-	3/	790	111
" salted	2,452	5,292,147	365,158	2,245	2,551,850	357,259	10	59,220	4,086	8	21,531	3,014
Fish skins, tanned	-	1,335	92	1	134,130	18,778	-	-	-	-	-	-
Fish skins, salted	229	329,166	22,712	3	8,425	1,179	178	126,232	8,710	1	3,218	450
Whale Products:												
Whale meat, froz.	374	573,207	39,551	-	-	-	1	2,201	152	-	-	-
" oil	2,335	10,196,305	703,545	2,499	5,894,186	825,186	-	-	-	-	-	-
" liver oil	15	7,500	517	14	38,086	5,332	-	-	-	-	-	-
" meal	465	992,201	68,462	502	597,094	83,593	-	-	-	-	-	-
" bone	127	174,152	12,016	-	-	-	-	-	-	-	-	-
Total	141,414	380,937,096	26,284,659	210,299	283,610,309	39,705,443	10,872	48,362,898	3,337,040	6,628	17,617,140	2,466,400

1/ 1,386 lbs. 2/ 330 lbs. 3/ 1,118 lbs.

Note: Exchange rates used for conversion of values to U. S. currency were: 1950 - 1 krone equals 6.9 U.S. cents; 1949 - 1 krone equals 14 U.S. cents.

almost twofold, from under 16,000 tons to more than 27,000 tons. The relative increase in exports of cured salt fish was even much larger, from only 297 tons in 1949 to more than 4,000 tons in 1950. The bulk of the salt-fish shipments were made to the Mediterranean area.

After a poor year in 1949, when low prices kept Icelandic shipments at a low level, cod-liver oil exports rose substantially in 1950. The volume of shipments was almost exactly twice as high in 1949, and the value of these shipments was 124 percent greater. The deterioration in the international situation was the principal factor increasing demand and prices for the oil. The Netherlands, which purchased cod-liver oil mainly for the production of margarine, and the United States, which uses the oil mainly for medicinal purposes, were the leading buyers.

As a result of the unexpectedly good herring catches in the fall and early winter months, salted herring shipments in 1950 were 79 percent higher in volume than in 1949. Foreign prices were relatively steady, but because of the two successive devaluations, the value of salted herring shipments was 163 percent higher in 1950 than in 1949.

Another interesting development in 1950 was the export of a considerable quantity of oil and meal produced from whole ocean perch. A number of trawlers engaged in ocean perch fisheries, for the first time since the early 1930's, in order to supply the steady foreign demand for oil and meal.

For the first time the United States assumed a leading position as a purchaser of Iceland's fish products, second only to the Netherlands in 1950. The sharp increase in shipments to the United States was principally in frozen fish, which rose to 7,409 metric tons valued at $2,429,516 (1949: 2,480 metric tons valued at $749,540). The most notable development in frozen fish shipments to the United States was the emphasis placed on freezing ocean perch. At the end of 1950, local freezing plants were busy producing ocean perch fillets in anticipation of continued United States demand in 1951.

* * * * *

GERMAN-ICELANDIC TRADE AGREEMENT INCLUDES FISHERY PRODUCTS: Fishery products are included in a German-Icelandic Treaty of Commerce and Navigation signed at Frankfort-on-the-Main on December 19, 1950. This treaty will be in force until March 31, 1951, and from then on will be extended automatically for a period of one year unless one of the parties denounces it with an advance notice of three months, reports a January 25 American consular dispatch from Bremerhaven.

Connected with the Treaty is the "Trade Agreement for the period March 15 to December 31, 1950," signed on December 12, 1950, and at the same time extended until December 31, 1951.

According to the Trade Agreement, the German government will issue import licenses, among others, for fishery products, as follows:

US$1,800,000	- ICED FRESH FISH OTHER THAN HERRING (INCLUDING UP TO $200,000 QUICK-FROZEN FISH)
400,000	- SALTED HERRING
200,000	- ICED FRESH HERRING
100,000	- SALTED FILLETS, SALTED FISH, DRIED FISH
1,300,000	- HERRING OIL
785,000	- HERRING MEAL
150,000	- COD LIVER OIL
60,000	- FISH ROE
TOTAL US$4,795,000	

The above amounts may be exceeded upon mutual agreement.

To carry through the importation of fish from Iceland, the "Open Individual License System" is to be applied.

Fresh fish (except herring and frozen fish) from Iceland may be landed in the Federal Republic of Germany only during the period from August 1 to November 15.

The Treaty provides reciprocal most-favored-nation treatment and, in addition to other conditions, payments for all commodities to be made in pound sterling through the National Bank of England, London, as Iceland is a sterling-block country.

No fishery products are included in the list of German exports to Iceland.

* * * * *

LOANS FOR TRAWLERS: Loans to complete the financing of ten new trawlers which are being constructed in the United Kingdom were recently granted the Icelandic Government by two London banks. The present short-term loans total £350,000 ($980,000) and are supplementary to an initial 20-year loan of £1,250,000 ($3,500,000) which was also negotiated with a London bank in July 1949.1/

In a speech to the Althing (local parliament) on October 13, 1950, the Minister of Finance reported that the total cost of the ten trawlers, fully equipped with up-to-date machinery, including fish-meal processing equipment, is £1,724,000 ($4,827,200) excluding interest. These ten trawlers were ordered in 1948 when it appeared desirable to enlarge Iceland's fleet of so-called "reconstruction trawlers," reports an American consular dispatch dated December 15, 1950, from Reykjavik.

These trawler purchases were first and foremost initiated by two of the largest trawler centers in the country, Reykjavik and Hafnarfjordur. The decision was based on the premise that the old trawlers would be so costly to operate that it would be impossible to continue their operations, as experience had already indicated. It has become evident that the number of trawlers operating from this country during the coming years would be reduced if measures to purchase new trawlers were not taken. These trawlers are now under construction in Great Britain, and will be completed during the period October 1950-August 1951.2/

These trawler purchases were undertaken first and foremost at the instigation of the major trawler centers in order to prevent a reduction in the trawler operations in these centers, and therefore it is presumed that these municipalities will take over the trawlers ordered as soon as they are completed.

1/SEE COMMERCIAL FISHERIES REVIEW, OCTOBER 1949, PP. 47-48.
2/IBID, FEBRUARY 1951, PP. 55-56.

Indonesia

ECA FUNDS AIDING DEVELOPMENT OF FISHERIES: For the procurement in the United States of scientific instruments to equip a research fishing vessel, the Economic Cooperation Administration on March 14 authorized an increase of $7,000 to a previous authorization of $8,000, making a total of $15,000 available for this purpose. The research vessel was procured with ECA funds from the Netherlands for $130,000. To procure equipment from The Netherlands and the United Kingdom, $3,000 was previously authorized.

The March 14 authorizations bring the ECA aid approved for the development of fisheries in Indonesia to a total of $1,003,000. This sum includes the purchase of 60 majang-type fishing boats, 100 Diesel boat engines, and 15 tuna-fishing boats, all manufactured in Japan. The initial shipment of majang boats is scheduled to be delivered in Indonesia in April.

Japan

FISHERMEN FACING ECONOMIC CRISIS: With an increase in operating costs and, in many instances, a decline in the prices paid to fishermen for their catches, the Japanese coastal fisheries are facing a growing economic crisis, in spite of the fact that physical rehabilitation has been encouraging. While fish production is almost up to the prewar level, the number of fishermen is now about 40 percent larger than before the war, according to the Weekly Summary of February 17, 1951, issued by SCAP's Natural Resources Section.

The total catch of all species for Japan proper is still slightly less than that taken before the war because of the continued scarcity of sardines and herring. The 1950 production of 3,540,000 metric tons (excluding aquiculture and Antarctic whaling), is an increase over the 1949 production, but remains below the 1935-39 average of 3,590,000 metric tons.[1/] Supply scarcities rather than decreased fishing effort is responsible for this decline in catch.

With the removal of price controls in the spring of 1950, the free market price of fish has dropped to about the 1949 controlled price level. This indicates that present production is about adequate for Japanese current demand for food at present price levels. Higher production as a result of increased consumption could only result through further decreases in consumer prices or through marked improvement in the quality of fresh and processed fish.

Although the physical rehabilitation program is about complete, the growing economic crisis becomes increasingly apparent. The crisis has been caused by the following factors:

1. Fishermen operating in Japan's coastal fisheries are now about 40 percent more numerous than before the war, as a result of repatriation of fishermen from Japan's colonies and the absorption of unemployed persons from stagnant industries.

2. Over-all fisheries production has not reached the prewar level in spite of the larger number of fishermen and boats because of the scarcity of sardines and herring, and in some cases of overfishing and decreased catches caused by too many fishermen and boats. Thus, with about 40 percent more fishermen and a smaller total production, the individual fisherman's share in the catch now is much less than before the war.

3. Operating costs for fishermen have increased, and in many instances the price of his catch has declined. The drastic rise in the cost of fuel oil, Manila fiber, and cotton in the world markets has greatly increased his cost of operations. The decrease in price of fish received by the fisherman, since the spring of 1950, has reduced his income. For most coastal fishermen, these two movements have wiped out whatever operating margin they enjoyed in 1949.

As a result of these developments, more and more coastal fishermen are unable either to pay off their old loans or to obtain additional credit to finance further operations. Sound financing is impossible under such conditions and production in some fisheries already is beginning to decline. Coastal fishermen in most areas now are facing financial collapse. If this situation is allowed to continue, it will make necessary great outlays of relief funds; serious declines in production will be incurred; and it will seriously threaten the success of the orderly fishery reforms which now are progressing favorably.

1/SEE COMMERCIAL FISHERIES REVIEW, JUNE 1950, P. 56.

Rehabilitation measures are unable to solve this growing complexity. To meet the economic crisis facing the coastal fishermen, a five point program has been offered by the Natural Resources Section: (1) stopping of further expansion in over-exploited fisheries, (2) development of sound conservation regulations, (3) establishment of strong Government departments for the enforcement of fishery regulations, (4) increase of fishermen's profits, and (5) establishment of a sound financing program.

* * * * *

FISHING AREA INSPECTORS VESTED WITH POLICE POWERS: Officials of the Japanese Ministry of Agriculture and Forestry, who are assigned to the Fisheries Inspection System, are authorized to exercise the functions of judicial police in enforcing the provisions of SCAPIN 2046, "Area Authorized for Japanese Fishing and Whaling," by an order (SCAPIN 2050/1) issued by SCAP on January 31. Before the issuance of SCAPIN 2050/1, officials assigned by the Ministry to act as inspectors on the vessels engaged in enforcing the observance of fishing areas were not vested with police powers, the February 10 Weekly Summary of SCAP's Natural Resources Section states.

* * * * *

EXPERIMENTS IN DRYING MARINE PRODUCTS BY INFRARED RAYS: Experiments in drying marine products by means of infrared rays are being conducted in Japan, according to the February 3 Weekly Summary issued by SCAP's Natural Resources Section. Some of this work is being done at the Tateyama Branch Fisheries Experimental Station, operated by the Chiba Prefectural Government. Experiments have been made with seaweed, cuttlefish, sardine, horse mackerel, and whale meat.

General results indicate that when fish is exposed under infraray lamps with a temperature at 40° to 50° C. (104° to 122° F.) a high percentage of the water content is eliminated within two hours. The drying time is further reduced if artificial ventilation is used to accelerate heat convection.

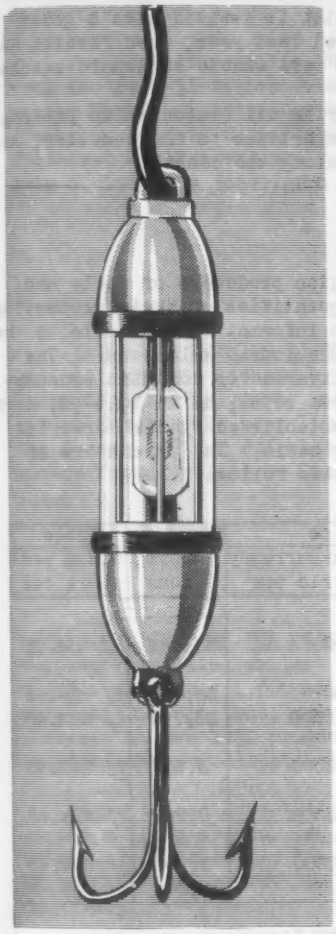
Researchers report that fish treated by infrared rays had little or no smell and no oily rust. Experiments are being continued to determine whether results will justify operation on a commercial scale.

Norway

UMBRELLA-TYPE BAG NET FOR HERRING AND COD: A type of bag net designed for herring and cod, which closes like an umbrella as it drops into the water, has been tested by Laurits Hoisaker of Nusfjord, Norway, according to the January 31 issue of Fiskaren, a Norwegian fishery periodical. It is reported that this new type of gear, for which a patent is being sought, will not frighten the fish as it drops into the water

The principle of this gear appears to be somewhat like that worked on and described by Johan Asphaug of Kristiansund. When the bag net has reached a position under the fish, hauling in begins, and the umbrella opens and covers an area equal to about 30 square yards. As soon as the gear is above the school of fish, it is

pursed to prevent the fish from escaping. Its capacity is about 20 metric tons. One advantage claimed for the gear is its ability to fish at much greater depths than ordinary nets.



ELECTRICALLY-LIGHTED LURE OR JIG.

ELECTRICALLY-LIGHTED JIG: An electrically-lighted lure or jig for line fishing, which can be connected to a battery or a fishing craft's lighting system, has been invented by a Norwegian skipper, Andreas Flesland of Flesland in Fana, Norway. The inventor has filed for a patent.

A two-phase cable insulated with plastic is used as a line. The type used in tests had a breaking strength of 176 pounds, but further tests are under way with a cable of smaller dimensions.

The lure or jig consists of a cylinder pointed at each end (see sketch). The ends are of metal while the central portion is a special type of pressure-resistant glass cylinder within which an electric lamp is placed. The strength of the lamp depends upon the battery or power source, for example 10 amperes and 24 volts or 10 amperes and 12 volts. The lamp is connected to the cable and the latter is fastened to the eye in the lure or jig with a turn so that there is no direct strain on the lamp connection. Watertight seals of rubber are used between the glass and the metal. A firmly fixed triple hook of slightly greater dimensions than in the illustration is used. It is reported the lure has had a good reception by fishermen.

* * * * *

FISH CANNERS ACCORDED PRIORITY FOR TIN PLATE: The shortage of tin plate has been a cause for concern to Norwegian canners, according to a January 29 American consular dispatch from Oslo. The Norwegian Government had forbidden the use of tin plate, effective on January 1, in certain food-preserving operations, but accorded priority to canners of fish and other export products.

* * * * *

EXPERIMENTAL STORAGE SILOS FOR HERRING: Methods for preserving herring for later reduction into meal and oil are being tested by the Norwegians, a January 23 American consular dispatch from Bergen reports.

The new experimental storage plant at Trollebø (close to Maaløy) is now ready for the storage of herring. Two of the three contemplated silo tanks for storage of herring are completed. One has a capacity of 180 metric tons and the other 720 tons. It is expected that the third tank will be finished during the course of the season. In addition to the tanks, a bin with a capacity of approximately 720 tons has also been built. Engineer Sola, an employee of the Chemical and Technical Experimental Institute of the Norwegian Directorate of Fisheries, has been

in charge of the construction. According to him, tests made last year gave favorable results and he states that the cost of the preservative to be used will average a little less than 1.5 cents per 100 pounds of herring.

The results of the experimental storage installation is awaited with a great deal of interest in view of the difficulties encountered last year, when fishing had to be stopped for ten days because shore installations were unable to handle catches.

If successful, the tanks will also enable the herring oil factories to prolong their operating season which will be of considerable importance to the industry, and a number of such silo storage tanks will be installed along the coast.

NOTE: ALSO SEE COMMERCIAL FISHERIES REVIEW, MAY 1950, P. 78; APRIL 1950, P. 74.

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PART OF 1950/51 WHALE OIL PRODUCTION SOLD: Norwegian producers of whale and sperm oil already have contracted to sell substantial quantities of their production from the 1950-51 Antarctic pelagic season, according to information available to the U. S. Department of Agriculture's Office of Foreign Agricultural Relations. The total whale oil sold, including that which is to be delivered for domestic consumption, is 142,570 short tons (129,339 metric tons). These sales, as in 1949-50, have been arranged through the Selling Pool which has been established by the Norwegian whaling companies to facilitate sales on a more orderly basis. The purchasers of the whale oil, the quantities contracted, and sales prices follow:

Contractor	Quantity	Price	Quantity	Price
	Metric tons	In foreign currency per metric ton	Short tons	U.S.$ per short ton
United Kingdom, Ministry of Food	30,000	£100	33,069	1/ 254.01
Norway, Sandar Fabrikker and De-No-Fa	30,000	£100	33,069	1/ 254.01
Western Germany, Margarine Union	12,500	N.Kr. 2300	13,779	2/ 292.43
Netherlands, Voedselvoorziening Import Bureau	5,000	N.Kr. 2300	5,511	2/ 292.43
Sweden, Karlshamns Oljefabrikker	7,500	N.Kr. 2300	8,267	2/ 292.43
Denmark, Dansk Sojakagefabrik A/S and Aarhus Oliekagefabrik A/S	3,000	N.Kr. 2300	3,307	2/ 292.43
Total	88,000	-	97,002	-

1/ Pound sterling converted at official rate of $2.80.
2/ Norwegian kroner converted at official rate of $0.140154.

Deliveries of whale oil to be made in Norway will total 45,568 short tons, all of which is exclusive of the above contracts.

The Selling Pool has sold further about 5,512 tons of sperm oil at prices ranging from $203 to $224 per short ton (£72-10-0 to £80 per metric ton). This is somewhat higher than the prices at which the British and South African whaling companies have arranged to sell their production of sperm oil from this season. Their prices ranged from $196 to $205.80 per short ton (£70 to £73-10-0 per metric ton).

The total Norwegian Antarctic whale and sperm oil production from the 1949-50 season was 207,232 tons. Of the 195,107 tons of whale oil produced, 46,297 tons were sold for domestic use at a price of $141.13 per ton. Of the balance, some was processed in Norway for later export and the remainder was sold direct to other countries at prices varying from $200 to $210 per ton.

The Norwegian Selling Pool for the joint sale of whale and sperm oil produced from the 1950-51 season's catch was organized on May 22, 1950, according to the Norwegian Whaling Gazette for May 1950. Agreement to have a pool again was reached at a meeting held in Sandefjord, Norway. All the Norwegian pelagic companies and A/S Tonsbergs Hvalfangeri are parties to the pool. A similar agreement was made on July 6, 1949, in Sandefjord for the 1949-50 sale of whale and sperm oil.

Panama

TAXES FOR FISHING RIGHTS: A Panamanian executive decree was issued in January 1951 to regulate fishing by foreign-owned vessels in the territorial waters of Panama. Taxes for fishing rights were fixed at $300 for ships of less than 25 tons and up to $1,000 for vessels over 150 tons, according to an American Legation report of March 5. The decree further stipulated that live-bait fishing will be permitted in Pacific waters from April 15 to December 31 each year.

Portugal

HIGHLIGHTS OF THE FISHING INDUSTRY, 1950:1/ Production: Portuguese fish production (excluding whales) for 1950 was estimated at about 228,000 metric tons with a value of nearly 1,000 million escudos ($34,700,000) as compared to the revised total of 216,086 tons, valued at 950 million escudos ($36,860,000) in 1949. This increase in the 1950 production was due primarily to the good sardine catch, an American Embassy dispatch from Lisbon dated February 28, 1951, reports.

Imports and Exports: Imports of fish (mainly cod) totaled 26,984 tons, valued at 229 million escudos ($7,946,300) for 1950. The Portuguese cod-fishing fleet is insufficient to supply the annual consumption requirements of about 60,000 tons of groundfish and importation from Newfoundland, Norway, and other countries is always necessary.

Exports of fish (mainly canned fish) were approximately equal to imports in weight but about double in value.

Canned Fish: The Portuguese canneries in 1950 produced an estimated 1,700 standard cases2/ of sardines, or more than double the 1949 production. Although the canning industry had been faced with a critical supply shortage at the beginning of 1950, the return of the sardine to the coastal waters in the latter part of July resulted in an estimated annual production of at least double the 1949 catch of 36 thousand metric tons. The estimated total production of canned fish for the year, including anchovies, salmon, etc., amounted to about 2,300,000 cases.

1/SEE COMMERCIAL FISHERIES REVIEW, OCTOBER 1950, PP. 55-66.
2/A WOODEN CASE HOLDING 100 1/2-CLUB CANS (30 MM. SIZE), EACH CAN CONTAINING 4 1/8 OZ.--GROSS WEIGHT OF CASE IS APPROXIMATELY 51 POUNDS, WHILE THE CONTENTS OF THE CASE (EXCLUDING THE WEIGHT OF THE WOODEN CASE) IS ABOUT 42 POUNDS.

Exports of canned fish did not keep pace with production, amounting to a total of only 1,357 thousand cases of canned fish, including 846 thousand cases of sardines, in an 11-month period. Exports of sardines for the year are estimated at about one million cases. Total exports of canned sardines in oil or sauce were 17,423 metric tons (729,189 cases) in 1950 against 16,925 metric tons in 1949 (table 1). Sardine shipments to the United States in 1950 were 120,701 cases, compared to 57,319 cases in 1949.

Table 1 - Exports of Principal Fishery Products, 1949-50

	QUANTITY		VALUE			
	1950	1949	1950		1949	
	Metric Tons	Metric Tons	Million Escudos	U. S. Dollars	Million Escudos	U. S. Dollars
Sardines, canned	17,423	16,925	334	11,589,800	294	11,407,200
Anchovies, "	3,297	3,788	84	2,914,800	87	3,375,600
Tuna and similar species, canned	1,827	1,957	49	1,700,300	52	2,017,600
Other preserved fish	2,241	1,006	29	1,006,300	13	504,400
Total	24,788	23,676	496	17,211,200	446	17,304,800

According to informants in the trade, however, nearly half of the 1950 pack remained unshipped at the end of the year. It is understood, however, that there was a very good foreign demand for Portuguese sardines at the beginning of 1951, and it is assumed that the large stocks in Portuguese warehouses will be shipped during the first five months of 1951 before the new fishing season gets under way.

The British Government signed a collective contract with the Canned Fish Institute on June 2 for the purchase of 500,000 cases of sardines of the 1950-51 pack at a price of 290 escudos ($10.09) a case. The contract provided, however, that if production should fail to reach 2,000,000 cases only 25 percent of the actual production need be reserved for the British contract. Actual exports to Great Britain totaled only 5,375 metric tons or about 235,000 cases during 1950, but it is anticipated that the balance of the contracted amount will be shipped early in 1951.

Exports of anchovies were especially good, amounting to 2,888 tons in 1950 against 623 in 1949. Over 80 percent of the exports went to the United States.

The return of the sardines, while it brought relief to the canning industry, created a new problem. The Canned Fish Institute, which had accumulated large stocks of tin plate for which it saw no prospective market, disposed of a portion of the stocks in May. It became evident by the end of July that additional supplies would be needed and the Institute and the Portuguese Government, as well as individual canners, made desperate efforts throughout the last 5 months of the year to place orders for tin plate. These efforts were largely futile. Until new supplies of tin plate are received, the canners will be unable to prepare stocks of cans for the new season, and if substantial supplies are not received before the end of April, part of the new season's catch may be lost.

Whaling Industry: Whale and sperm oil were exempted from export duty in a legislative decree issued by the Portuguese government on September 11, 1950. The exportation of whale oil in 1950 amounted to 4,997 metric tons with a value of 24 million escudos ($832,800), a substantial increase over the 1949 figures of 1,187 metric tons worth 9 million escudos ($349,200).

NOTE: VALUES CONVERTED TO AMERICAN CURRENCY ON THE BASIS OF THE FOLLOWING EXCHANGE RATES: 1950 - 1 PORTUGUESE ESCUDO EQUALS 3.47 U. S. CENTS; 1949 - 1 ESCUDO EQUALS 3.88 U. S. CENTS.

Sweden

ONE-BOAT FLOATING TRAWL: In March or April this year, a floating trawl, requiring only one boat, will be tested off Bornholm, Sweden, on bottom so rough that the usual trawl cannot be used effectively. The Swedish inventor, Karl-Hugo Larsson of Stockholm, calls his new gear the "phantom trawl," according to the February 14 issue of Fiskaren, a Norwegian fishery periodical. No details on the construction or operation of the gear were given.

United Kingdom

HERRING OIL AND MEAL PRODUCTION, 1950: Herring oil production in the United Kingdom in 1950 was 3,144 long tons--an increase of 50.8 percent over the 2,085 long tons produced in 1949, according to the British Herring Industry Board. Of the total output in 1950, 2,926 tons were sold for first-grade edible purposes and 218 tons of lower-grade quality were sold for manufacturing purposes, a March 9 American Embassy dispatch from London states.

Production of herring meal for animal feed totaled 6,284 tons in 1950, compared with 4,150 tons in 1949.

The amount of herring diverted for processing into oil and meal in 1950 increased to 36,509 tons, compared with 23,269 tons in 1949. The Board reports that the herring fishing in 1950 was not as productive as had been expected, the landings being some 24,500 tons less than in 1949. Domestic and export demand were, however, on a generally lower level than in 1949, with the result that substantially greater quantities of herring became available for reduction to meal and oil.

In describing its expansion program, the Board states that early last year the Board had hoped to begin construction of a second plant. This project has, however, been somewhat delayed and it will not be possible to put the plant into operation until about the beginning of April of this year. Work on the third factory has begun, and this plant should be ready for the autumn fishing season this year. The approved program envisages the construction of three factories in addition to those here mentioned. The provision of these factories should raise the production potential by the end of 1951 to about 15,000 tons a year of oil and 10,000 to 12,000 tons of meal. Additional apparatus for the full recovery of meal (say 25,000 to 30,000 tons) is to be installed between 1952 and 1954.

Venezuela

FISHERY PRODUCTS IMPORT DUTIES INCREASED: In order to provide additional protection to the national fish-canning industry, Venezuelan import duties on fishery products were substantially increased effective March 1, 1951, according to an American Embassy dispatch from Caracas (see table). Excepted, however, were canned salmon and sardines from the United States.

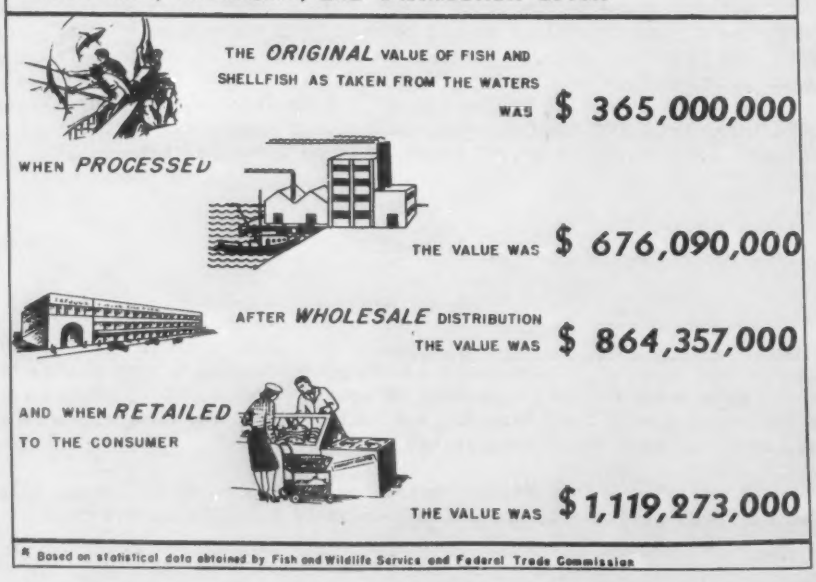
Under the existing United States-Venezuelan trade agreement, canned salmon under item No. 3(d) produced in the United States is dutiable at the rate of 0.90

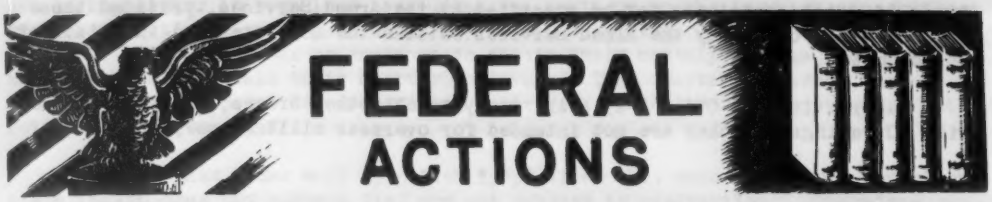
Venezuelan Former and New Rates of Duty for Fishery Products Imports

Tariff No.	Description	Former		New	
		In Bolivares Per Gross Kilogram	U.S. Cents Per Gross Pound	In Bolivares Per Gross Kilogram	U.S. Cents Per Gross Pound
2	Dried, salted, salt-preserved, or smoked fish products:				
	(a) Herring	1.20	16.4	2	27.3
	(b) Codfish	1.20	16.4	2	27.3
	(c) Sardines	.28	3.8	2	27.3
	(d) Unspecified	1.20	16.4	2	27.3
3	Fish products, except dried, salted, salt-preserved, or smoked:				
	(a) Herring	1.20	16.4	2	27.3
	(b) Tuna	1.20	16.4	2	27.3
	(c) Codfish	1.20	16.4	2	27.3
	(d) Salmon	1.20	16.4	2	27.3
	(e) Sardines, in unspecified form	.28	3.8	2	27.3
	(h) Unspecified	1.20	16.4	2	27.3
	(i) Sardines in olive oil	-	-	2	27.3

Note: - Values converted to U. S. currency on the basis of 1 bolivar equals U.S. $0.30.

bolivar per gross kilogram (12 cents per lb.); also the agreement rate on United States canned sardines packed in sauce, their own juice, or oil (but not olive oil) and included under item 3(e) of the customs tariff is specified at 0.28 bolivar per gross kilogram (3.8 cents per lb.). These trade-agreement rates continue in effect for imports from the United States and from other countries with which Venezuela has commercial treaties or modus vivendi containing most-favored-nation clauses.


Estimated Value of Fish and Fishery Products at PRODUCTION, PROCESSING, and DISTRIBUTION Levels*
1950
THE ORIGINAL VALUE OF FISH AND SHELLFISH AS TAKEN FROM THE WATERS WAS $ 365,000,000
WHEN PROCESSED
THE VALUE WAS $ 676,090,000
AFTER WHOLESALE DISTRIBUTION THE VALUE WAS $ 864,357,000
AND WHEN RETAILED TO THE CONSUMER
THE VALUE WAS $1,119,273,000
* Based on statistical data obtained by Fish and Wildlife Service and Federal Trade Commission



Department of Commerce

NATIONAL PRODUCTION AUTHORITY

TIN ALLOCATIONS INCREASED TO PROVIDE FOR CANNING OF PERISHABLE FOODS: To provide for the canning of perishable foods and for other essential purposes, the National Production Authority on March 12 placed all domestic users of pig tin under allocation control effective May 1, and made a temporary, seasonal increase in tin allocations in the second quarter (Amendment 3 to NPA Order M-8).

At the same time NPA also designated the Reconstruction Finance Corporation as the sole importer of tin in the country. This should result in more orderly arrangements for acquiring tin needed in the United States, NPA said. This country normally uses about half of the tin produced in the world.

NPA explained that the second quarter increases in use allocations were made primarily to provide supplies of tin plate and terneplate for the canning industry, which must pack perishable farm crops that begin coming to market in May. This action assures cans for the spring and summer food pack, as the farmers harvest their crops. NPA indicated that the percentages of permitted use of tin would be dropped back to about 80 percent or less in the third quarter.

Amendment 3 to NPA Order N-8 permits tin plate and terneplate manufacturers to increase temporarily their use of pig tin to 95 percent of their monthly base period use during the second quarter. All other users of pig tin are permitted 90 percent of their monthly base period use during the second quarter. The base period is the first six months of 1950.

Under the previous tin conservation order (M-8)[1/] all users of pig tin were restricted to 100 percent of their base period use in January, and 80 percent in February and March.

1/SEE COMMERCIAL FISHERIES REVIEW, MARCH 1951, P. 49; FEBRUARY 1951, P. 81.

* * * * *

CANNED PRODUCTS FOR USE BY ARMED FORCES EXEMPTED FROM METAL CAN ORDER: The National Production Authority on March 16 amended the metal can specification and limitation order (M-25)[1/] to exempt the Armed Services from restrictions pertaining to the canning of products for use overseas.

This action will provide the additional packaging protection required by the military forces for canned products used overseas and subject to adverse handling conditions. NPA explained that the plate specifications of the original order (M-25) were based on customary conditions of storage and handling within the United States.

1/SEE COMMERCIAL FISHERIES REVIEW, FEBRUARY 1951, PP. 79-81.

This amendment permits the packing of products having a DO rating in whatever types of metal containers may be specified by the Armed Services, provided these products are for use by the Armed Services outside the 48 States and the District of Columbia.

Restrictions of Order M-25 still apply to all other orders, including those with DO ratings, if they are not intended for overseas military use.

* * * * *

FOOD CANNERS ABLE TO INCREASE PACK IN CERTAIN CASES: Under "automatic" base-period adjustment provisions of its containers order,[1/] announced on March 12 by the National Production Authority, canners of food and other products will be able to increase their pack in certain cases where undue hardship would result under base-period provisions of the order.

Perishable foods (including fishery products) are permitted an unlimited pack, and the March 12 action (Direction 1 to NPA Order M-25) does not change this original provision of the order.

However, NPA explained that it has received a number of requests for adjustments under NPA Order M-25 which regulates the use of metal cans by the packing industry. Under this order the pack of all products, except perishable foods, is regulated in accordance with the base-period pack of such products. The base period is the corresponding quarter of 1949 or 1950.

Many of the applications for adjustment of the base period represent problems common to the industry and Direction 1 to NPA Order M-25 permits all packers to make their own readjustments in the following cases:

1. Where the base period is inapplicable because a particular product was not packed during the base period, or was packed during only a part of the base period.

In this case, packers are permitted to add up their entire pack of a certain product during either 1949 or 1950, divide that by the number of months in which the product was packed to obtain a monthly average, and then multiply by three to get their quarterly average. The quarterly average so obtained may be used as the base period for this particular product, until the packer is otherwise notified by NPA.

2. Where the base period is inapplicable because the pack of a certain product during the base period was less than the customary volume of packing of that particular product.

In this case, packers are permitted to add up their entire pack of a certain product during either 1949 or 1950, divide this by the number of months in which the packing took place to get the average monthly pack, and then multiply this by three to get their quarterly average. The quarterly average so obtained may be used as their base period for this particular product until notified otherwise by NPA.

3. Where there were shut downs of more than 15 consecutive days during the base period,

1/SEE COMMERCIAL FISHERIES REVIEW, MARCH 1951, P. 49; FEBRUARY 1951, PP. 79-81.

In this case, packers are permitted to add up their pack of a particular product during either 1949 or 1950, excluding the month or months in which any shutdown of 15 consecutive days or more occurred. They then divide this by the number of months in which there was no shutdown to obtain their monthly average, and multiply this by three to obtain their quarterly average. This quarterly average may be used as the base period for determining their pack of this particular product until notified otherwise by NPA.

NPA said that Order M-25 specifically provides that cans made wholly of black plate (which does not contain tin) are not subject to restriction. Therefore, these cans should be excluded in the computations in making the base period adjustments. However, cans made in whole of tin plate or terneplate, or a combination of tin plate and black plate or terneplate and black plate, should be included in the computations. To aid packers in making their own adjustments, Direction 1 gives specific examples of how these base period adjustments may be made in typical cases.

Packers who readjust their base-period-use averages under Direction 1 are required to continue to use during succeeding quarters of 1951 whatever adjustment they elect to use during the first quarter of 1951, until otherwise ordered by NPA. They are also required to prepare and retain detailed written records of the facts relating to the readjustment and to make the records available for audit by NPA when requested to do so.

NPA said that cases not covered by Direction 1 that have been submitted to NPA for adjustment will be subject to NPA rulings, and that any packer who wishes to file an application for adjustment not covered by the Direction may do so by submitting form NPAF-38, "Cans: Users Application for Adjustment or Exception." Copies of the form may be obtained from Department of Commerce field offices.

However, all packers are permitted to make their own base-period-use adjustments in line with Direction 1 whether or not they have filed an application for adjustment with NPA.

Previous restrictions of NPA Order M-25 specifying the amount of pack, as related to the base-period use, of various types of products, and the quality of tin plate, terneplate, or black plate that may be used for each, remain in effect.

Further information may be obtained from Department of Commerce field offices.

* * * * *

SIMPLIFICATION AND USE OF GLASS CONTAINERS: An order (M-51) prohibiting new designs in glass containers after March 31 was announced by the National Production Authority. Means for establishing simplified styles of glass containers, if such action becomes necessary to achieve additional production, is also provided in the order.

Order M-51 is intended to avoid wasting the industry's production capacity because of the heavy demand for glass containers arising from limitations placed on use of tin in packaging containers.

If necessary to secure more production, NPA may under the new order require the packaging of specified products in simplified glass containers. Should such end-use restrictions be put in effect, through the later addition of a schedule to M-51, a conversion period will be permitted.

NOTE: COPIES OF REGULATIONS, NOTICES, PRESS RELEASES, ETC., ISSUED BY THE NPA ARE AVAILABLE FROM THE NATIONAL PRODUCTION AUTHORITY, DEPARTMENT OF COMMERCE, WASHINGTON 25, D. C., OR FROM DEPARTMENT OF COMMERCE FIELD OFFICES.

Defense Transport Administration

DOMESTIC CIVILIAN TRANSPORTATION REQUIREMENTS PROGRAMS SUBMITTED TO NPA: The Defense Transport Administration announced March 19 that it had completed and forwarded to the National Production Authority programs covering domestic civilian requirements for the year 1951 for new trucks and truck tractors; truck trailers; automotive replacement parts; and other public transportation facilities.

The submission of these programs follow the completion of intensive studies into the numbers of the various kinds of transport equipment now in operation, average ages, obsolescence, and prospective increases in traffic resulting from the expansion in the civilian economy and the program of mobilization for defense.

Economic Stabilization Administration

OFFICE OF PRICE STABILIZATION

CONTRACTS TO SELL FOR FUTURE DELIVERY: Contracts to sell for future delivery are now permissible under Amendment 6 to the General Ceiling Price Regulation issued by the Office of Price Stabilization on March 16.

The change allows sellers to offer a commodity or service for future delivery at the ceiling price in effect at the time of delivery or, if a fixed price is specified, at the fixed price or the ceiling price in effect at the time of delivery, whichever is lower.

In many cases "tailored" regulations, designed for particular industries, are now in preparation and will permit sellers to deliver commodities or services at ceiling prices different from those established under the General Ceiling Price Regulation. OPS officials explained that this action was taken in order that offers and contracts to sell for future delivery will not be impeded while the tailored regulations are under consideration. It was pointed out, however, that this change does not permit a seller to deliver a commodity or service at a price to be adjusted subsequent to delivery.

This amendment applies only to those commodities and services covered by the General Ceiling Price Regulation. It does not apply to any commodity or service for which a ceiling price is established by any other regulation or order of the Director of Price Stabilization in effect at the time the offer or contract is made.

TITLE 32A—NATIONAL DEFENSE, APPENDIX

Chapter III—Office of Price Stabilization, Economic Stabilization Agency

[General Ceiling Price Regulation, Amdt. 6]

GCPR, AMDT. 6—CONTRACTS TO SELL FOR FUTURE DELIVERY

AMENDATORY PROVISION

The General Ceiling Price Regulation is amended as follows:

Section 22 is amended by adding to the paragraph defining the word "sell" the following sentence: "Nothing in this regulation shall be construed to prohibit the making of a contract or offer to sell a commodity or service at (a) the ceiling price in effect at the time of delivery or (b) the lower of a fixed price or the ceiling price in effect at the time of delivery."

Effective date. This amendment shall become effective March 19, 1951.

MICHAEL V. DISALLE,
Director of Price Stabilization.

MARCH 16, 1951.

* * * * *

FISH MEAL AND SOLUBLES PRICE CEILING REGULATION RECOMMENDED: Adoption of a price ceiling regulation tailored to its specialized needs by April 1 was recommended today by the Fish Meal and Fish Solubles Manufacturers Industry Advisory

Committee in its first meeting with Office of Price Stabilization officials, according to a March 20 announcement by OPS.

Committee spokesmen emphasized that the industry is seasonal in nature and its regulation should be issued before the new fishing season starts in April.

The Industry's products mostly go into the commercial manufacture of feed used by farmers.

Industry members said the proposed regulation should take into account price relationships with competing products, such as meat scraps, and the relationship of prices within the industry between the east and west coasts.

Members of the industry advisory committee are:

Moses Pike, President
Associated By-Products Company
Eastport, Maine

Howard Sturgis, Manager
By-Products Department
Gorton-Pew Fisheries Limited
Gloucester, Massachusetts

Sidney Feener
Aberjona Division
General Foods Corporation
Woburn, Massachusetts

George Wallace, President
Wallace Fisheries
700 Evans Street
Morehead City, North Carolina

Edw. J. Robel, Manager
Menhaden Fish Meal Company
Baltimore, Maryland

Thomas A. Barber
J. Howard Smith Company
Monmouth, New Jersey

R. C. Hayes
Consolidated Fisheries
Lewes, Delaware

Wallace M. Quinn, President
Quinn Menhaden Fisheries Inc.
Fernandina, Florida

H. R. Humphreys, Jr., Manager
White Stone Products Company
White Stone, Virginia

Malcolm Goldie, Sales Manager
Van Camp Sea Food Company
Terminal Island, California

Charles Hester, Vice President
Pacific Processing Company
704 S. Spring Street
Los Angeles, California

A. H. Mendonca, President
F. E. Booth Company, Inc.
San Francisco, California

Lief Ericksen
Chatham Strait Fish Company
2408 Commodore Way
Seattle 99, Washington

Donald Saxby
California Packing Corporation
San Francisco, California

* * * * *

FROZEN TUNA FOR CANNING NOT "FRESH FISH:" The question was presented to the Office of Price Stabilization as to whether or not tuna and tuna-like fish that have been frozen for canning could be considered "fresh fish" pursuant to Section 14 (s) (8) of the General Ceiling Price Regulation issued January 26, 1951. An interpretation issued by that agency on March 2 states that tuna and tuna-like fish that have been frozen are not considered "fresh fish" and, therefore, come under the general freeze on prices which took place with the issuance of the General Ceiling Price Regulation.

* * * * *

RECORD-KEEPING REQUIREMENTS OF PRICE CONTROL PROGRAM: OPS's Assistant Director of Enforcement on March 18 directed his field investigating staff to begin an immediate nationwide check to make sure that manufacturers and wholesalers are keeping full price schedules and records required by the price control program.

Evidence already received indicates there is widespread non-compliance with the record-keeping requirements of OPS, the Assistant Director reports.

All regional and district offices are soon to receive a manual outlining in detail exactly what records must be kept by manufacturers and wholesalers in order to comply with the law. This manual will be followed up by a second booklet dealing with retail merchants' record requirements. An investigation of retailers was expected to begin on a nationwide basis sometime after March 22, the date the record requirements become effective.

OPS regional and District offices now are staffed with personnel qualified to "answer questions pertaining to OPS regulations and assist all persons in connection with the preparation of records and statements."

The record-keeping requirements that must be fulfilled by wholesalers and retailers by March 22 were outlined by OPS as follows:

1. The seller must preserve all records in his possession showing the prices charged for all commodities or services delivered or offered for delivery during the period December 19, 1950, to January 25, 1951, and (as to wholesalers or retailers only) records establishing the latest net cost incurred by the seller prior to the end of that period with respect to each such item.

2. Each seller must prepare a statement showing the categories of commodities or services in which he made deliveries or offers for delivery during that period. The "categories" referred to are such general groupings as "infants' wear," "bedroom furniture," "hand tools," "cosmetics and toiletries," etc.

3. Each seller must prepare a ceiling price list listing and describing in detail (by model, type, style and kind) each separate item and each separate service delivered or offered for delivery by him during that period, together with a statement of the ceiling price for each such item as determined by reference to the highest price charged during that period.

4. Each seller must also prepare a statement of his customary price differentials and terms and conditions of sale and different classes of purchasers which were in effect during the same base period, that is, December 19, 1950 to January 25, 1951.

5. Each seller must also continue to prepare and preserve all records of the kind which he customarily kept showing the prices charged for all commodities or services, and he must also prepare records indicating the basis upon which his ceiling prices have been determined, as required by the regulation, for commodities or services not sold by him during that base period. With respect to retailers alone, they are required to preserve all purchase invoices and to record on them their initial selling prices for the item or items covered by the invoice and the section of the regulation under which their ceiling price or prices for these items were determined.

* * * * *

NEW BASE PERIOD PLANNED FOR CONTROLLING PRICES OF IMPORTS AT WHOLESALE AND RETAIL: Provisions of a tentative regulation which would set up special pricing standards for all imported commodities, except those specifically classified as "essential" or "strategic," were discussed on March 16 by the officials of the Office of Price Stabilization and the agency's new Import Industry Advisory Committee.

The new regulation, expected to be issued soon, would establish a new base period for controlling prices of imports at both the wholesale and retail level.

Prices of imported commodities now are controlled by the General Ceiling Price Regulation at the highest level they reached between December 19, 1950, and January 25, 1951--the base period established under the GCPR. Committee members said this base period was not "broad enough" for the import trade because of long shipping distances and the fact that most import contracts are made far in advance of delivery dates.

Importers' representatives asked OPS officials for quick action on the proposed new regulation. They said the general price freeze had "stymied" their business to such an extent that imports had fallen off "drastically" during the last two months.

Interstate Commerce Commission

FREIGHT RATES INCREASED FOR 1951: As a result of the railroads' request for increases in freight rates and charges on an interim basis, the Interstate Commerce Commission on March 12 made the following authorizations in Ex Parte No. 175:

> Except as otherwise provided in these findings, all basic freight rates and charges of petitioning railroads, including rates and charges for the transportation of milk and cream in passenger or freight service (including commodities listed in the milk and cream tariffs), may be increased 4 percent within eastern territory, 2 percent within southern territory, 2 percent within western territory, and 2 percent interterritorially between the three territories.

The following are important exceptions to the above affecting the fishery industries:

> Carload shipments of canned or preserved food products (not cold-pack or frozen) in packages, as specified in Item 490 of Tariff K-162-B, may be increased as provided in the above paragraph, subject to a maximum of 2 cents per 100 pounds.

> No increase is authorized in the charges for protective services published in Perishable Protective Tariff No. 15, Agent Quinn's I.C.C. No. 26.

> No increase is proposed or authorized in charges for demurrage on freight cars.

> No increase is proposed or authorized in charges for handling, loading or unloading, export, import, coastwise, or inter-coastal traffic which do not affect the measure of the line-haul rate and are not in addition to the line-haul rate.

Latest advices indicate that the railroads were endeavoring to make the authorized increases effective April 4.

These authorizations are made by the Interstate Commerce Commission on an interim basis and the proceedings will be held open for further h arings.

Eighty-Second Congress (First Session)

MARCH 1951

Listed below are public bills and resolutions introduced and referred to committees, or passed by the Eighty-Second Congress (First Session) and signed by the President, that affect in any way the fisheries and allied industries. Public bills and resolutions are shown in this section only when introduced and, if passed when they are signed by the President. The more pertinent reports, hearings, or chamber actions on some of the bills shown in this section from month to month are also listed.

BILLS AND RESOLUTIONS INTRODUCED:

Chemicals in Food Products: H. R. 3257 (Miller of Nebraska) - A bill to amend the Federal Food, Drug, and Cosmetic Act, as amended, by providing for the regulation of chemical additives in food; to the Committee on Interstate and Foreign Commerce.

Collisions at Sea: S. 1182 (Johnson of Colorado) - A bill to authorize the President to proclaim regulations for preventing collisions at sea; Committee on Interstate and Foreign Commerce.

Commercial Fisheries Activities Transfer: S. 1141 (O'Conor, for himself and 14 other Senators) - A bill to expand the activities of the Department of Commerce in accordance with the recommendations of the Commission on Organization of the Executive Branch of the Government. (Includes the transfer to the Secretary of Commerce of "all functions of the Secretary of the Interior and the Department of the Interior in relation to commercial fisheries.")

Also: H. R. 3310 (Hoffman of Michigan)...to the Committee on Interstate and Foreign Commerce.

Department of Agriculture Reorganization Includes Food Products Regulatory Functions: H. R. 3308 (Hoffman of Michigan) - A bill to provide for the reorganization of the Department of Agriculture in accordance with the recommendations of the Commission on Organization of the Executive Branch of the Government; to the Committee on Agriculture. (Included is a directive to the Secretary of Agriculture that in conjunction with the Federal Security Administrator and Federal Trade Commission a study be conducted of the "diverse requirements and procedures and overlapping authority of the various Federal agencies in connection with the exercise of regulatory functions with respect to food products and drugs, with a view to submission to the Congress of a plan for placing regulatory functions respecting food products under the Department of Agriculture and those respecting drugs under the Public Health Service.)

Also: S. 1149 (Aiken and 12 other Senators)...to the Committee on Expenditures in the Executive Department.

ECA Amendment: S. 1164 (Cnavey) - A bill to extend the provisions of the Economic Cooperation Act of 1948 so as to make them applicable to any nation friendly to the interests of the United States, and to transfer certain certain programs and agencies of the Federal Government to the Economic Cooperation Administration, and for other purposes; to the Committee on Foreign Relations.

Fish and Wildlife Conservation in Military Reservations: H. R. 3233 (Sikes) - A bill to promote effectual planning, development, maintenance, and coordination of wildlife, fish, and game conservation and rehabilitation in military reservations; to the Committee on Armed Services.

Foreign Trade Agreements Authority: S. 1122 (Malone) - A bill to terminate the authority of the President to enter into foreign trade agreements under section 350 of the Tariff Act of 1930, as amended; to the Committee on Finance.

Foreign Trade Agreements "Escape Clause:" S. 1040 (Malone) - A bill to provide for the inclusion in all existing foreign trade agreements of an effective "escape clause;" to the Committee on Finance.

General Ceiling Price Regulation Amendment: S. Res. 93 (Williams, for himself, and four other Senators) - Resolved, That the Director of Price Stabilization is requested to amend section 11 of the General Ceiling Price Regulation so that its provisions will not under any circumstances accord sellers greater than their normal margins of profit.

Tidelands Jurisdiction: H. R. 3300 (Rankin) - A bill to confirm and establish the title of the States to lands beneath navigable waters within State boundaries and natural resources within such lands and waters and to provide for the use and control of said lands and resources; to the Committee on the Judiciary.

Also: S. 940 (Holland and 34 Senators)...to the Committee on Interior and Insular Affairs.

Transportation Tax Exemption for Fishing Boats: H. R. 1607 (Boggs of Delaware) - A bill to amend section 3469 (b) of the Internal Revenue Code to provide that the tax imposed on the transportation of persons shall not apply to transportation on boats for fishing purposes; to the Committee on Ways and Means.

Also: S. 955 (O'Conor)...to the Committee on Finance.

Water Pollution Control Act Amendment: H. R. 3360 (Fulton) - A bill to encourage the prevention of stream pollution by allowing amounts paid for plants for the treatment of industrial waste as a deduction in computing net income; to the Committee on Ways and Means.

The following is an additional bill introduced during February and not previously reported in this section:

Sea Lamprey Investigations Appropriations: H. R. 2995 (Potter) - A bill to amend the joint resolution of August 8, 1946, as amended, with respect to appropriations authorized for the conduct of investigations and studies thereunder; to the Committee on Merchant Marine and Fisheries. (Indicates that the cost of investigations and studies of the sea lampreys of the Great Lakes by the Fish and Wildlife Service shall not exceed "$359,000 for the first year, $216,000 for the fiscal year ending June 30, 1951, and $500,000 for each of the five succeeding fiscal years.")

CONGRESSIONAL HEARINGS:

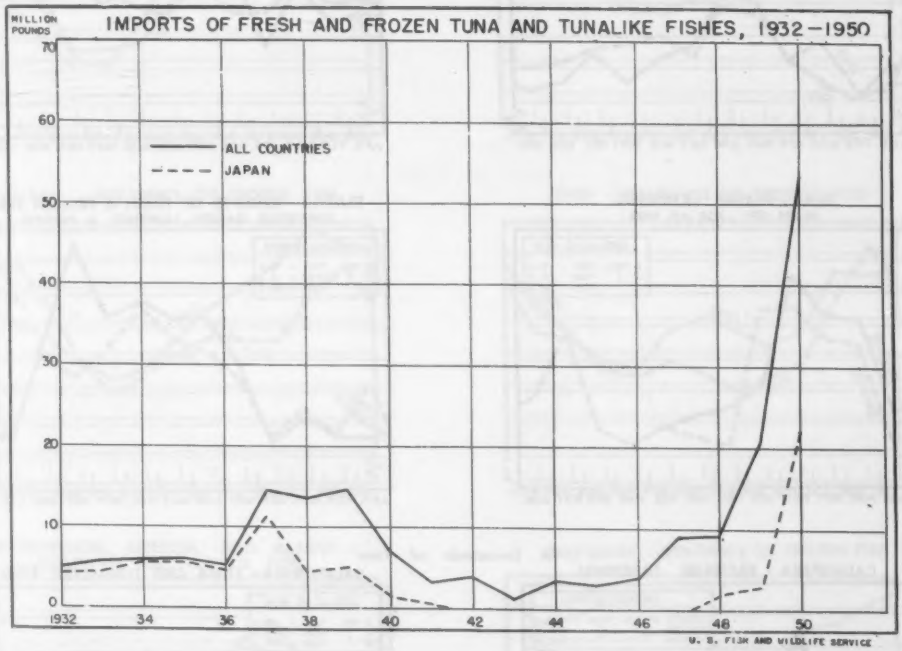
Printed proceedings of Congressional hearings of interest to the fishery and allied industries (available only from the committee holding the hearings):

Trade Agreements Extension Act of 1951 (Hearings before the Committee on Finance, United States Senate, Eighty-Second Congress, First Session, on H. R. 1612, an act to extend the authority of the President to enter into trade agreements under section 350 of the Tariff Act of 1930, as amended, and for other purposes). Part 1 - Hearings held on February 22, 26, 27, 28, March 1, 2, 5, 6, 7, 8, 12, 13, 1951, 999 p., printed; and Part 2 - Hearings held on March 16, 19, 20, 21, 22, April 3, 4, 5, and 6, 1951, 455 p., printed. This report contains all the statements and data submitted to the Committee on the Trade Agreements by Federal agencies and members of industry. It includes the testimony and information presented by members of the fishery and allied industries who testified as to the affect of these Agreements on the Nation's fisheries.

CONGRESSIONAL REPORTS:

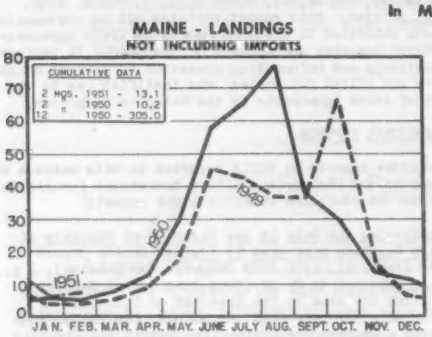
Committee reports on bills reported in this section of interest to the fishery and allied industries (available only from the committee submitting the report):

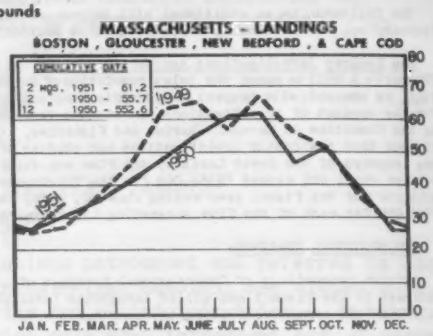
Prohibiting the Sale in the District of Columbia of Rockfish Weighing more than 15 Pounds, Senate Report No. 167 (March 14, 1951, 82nd Congress, 1st Session), 2 p., printed, pursuant to S. 41 (82nd Cong., 1st Session), prohibiting the sale in the District of Columbia of rockfish weighing more than 15 pounds for the purpose of making a uniform protective law within the District of Columbia for the conservation of this species in connection with similar conservation laws in the adjoining States. Committee recommended passage of the bill.

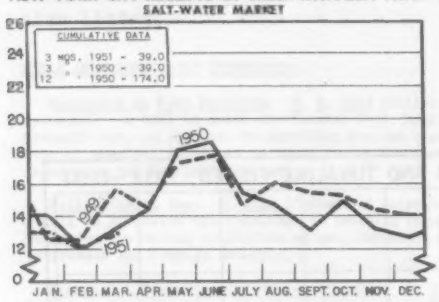


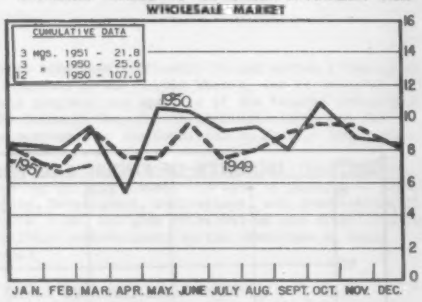
LANDINGS AND RECEIPTS

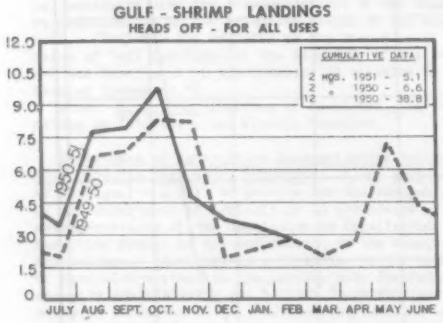
In Millions of Pounds

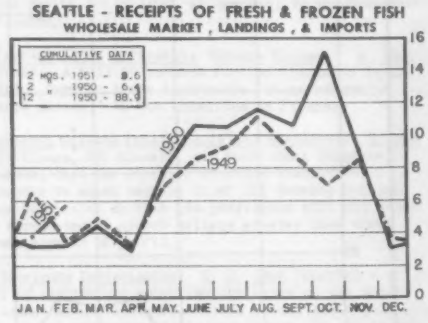



MASSACHUSETTS - LANDINGS
BOSTON, GLOUCESTER, NEW BEDFORD, & CAPE COD
CUMULATIVE DATA
2 MOS. 1951 - 61.2
2 " 1950 - 55.7
12 " 1950 - 552.6
1949
1950
1951
JAN. FEB. MAR. APR. MAY. JUNE JULY AUG. SEPT. OCT. NOV. DEC.

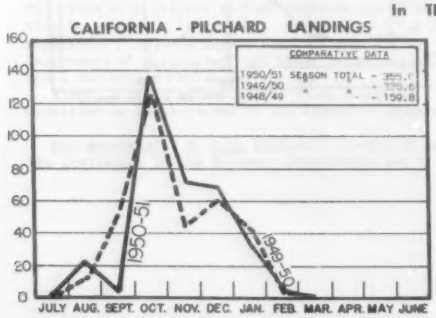

NEW YORK CITY-RECEIPTS OF FRESH & FROZEN FISH
SALT-WATER MARKET
CUMULATIVE DATA
3 MOS. 1951 - 39.0
3 " 1950 - 39.0
12 " 1950 - 174.0
1950
1949
1951
JAN. FEB. MAR. APR. MAY. JUNE JULY AUG. SEPT. OCT. NOV. DEC.

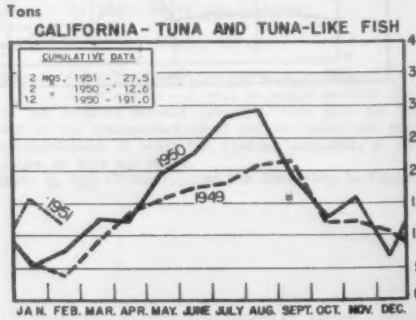

CHICAGO - RECEIPTS OF FRESH & FROZEN FISH
WHOLESALE MARKET
CUMULATIVE DATA
3 MOS. 1951 - 21.8
3 " 1950 - 25.6
12 " 1950 - 107.0
1950
1949
1951
JAN. FEB. MAR. APR. MAY. JUNE JULY AUG. SEPT. OCT. NOV. DEC.


GULF - SHRIMP LANDINGS
HEADS OFF - FOR ALL USES
CUMULATIVE DATA
2 MOS. 1951 - 5.1
2 " 1950 - 6.6
12 " 1950 - 38.8
1950-51
1949-50
JULY AUG. SEPT. OCT. NOV. DEC. JAN. FEB. MAR. APR. MAY JUNE


SEATTLE - RECEIPTS OF FRESH & FROZEN FISH
WHOLESALE MARKET, LANDINGS, & IMPORTS
CUMULATIVE DATA
2 MOS. 1951 - 8.6
2 " 1950 - 6.4
12 " 1950 - 88.9
1950
1949
1951
JAN. FEB. MAR. APR. MAY. JUNE JULY AUG. SEPT. OCT. NOV. DEC.

In Thousands of Tons

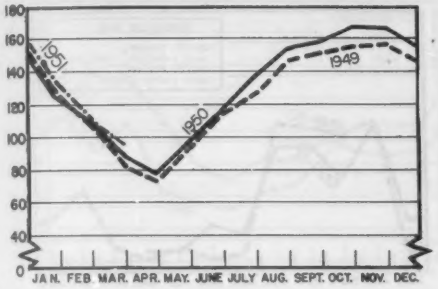

CALIFORNIA - PILCHARD LANDINGS
COMPARATIVE DATA
1950/51 SEASON TOTAL - 395.2
1949/50 " " - 335.6
1948/49 " " - 159.8
1950-51
1949-50
JULY AUG. SEPT. OCT. NOV. DEC. JAN. FEB. MAR. APR. MAY JUNE


CALIFORNIA - TUNA AND TUNA-LIKE FISH
CUMULATIVE DATA
2 MOS. 1951 - 27.5
2 " 1950 - 12.6
12 " 1950 - 191.0
1950
1949
1951
JAN. FEB. MAR. APR. MAY. JUNE JULY AUG. SEPT. OCT. NOV. DEC.

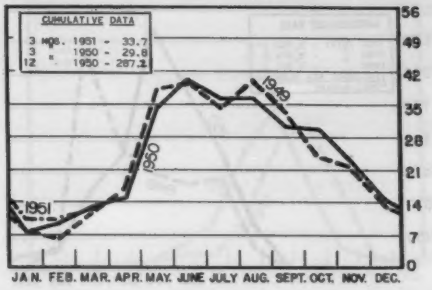
COLD STORAGE HOLDINGS and FREEZINGS of FISHERY PRODUCTS

In Millions of Pounds

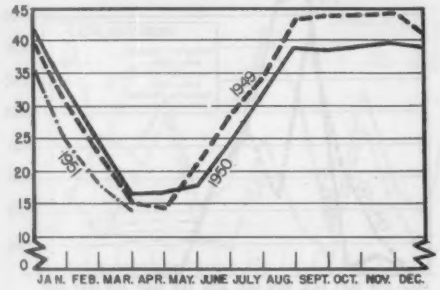
U.S. & ALASKA - HOLDINGS OF FROZEN FISH



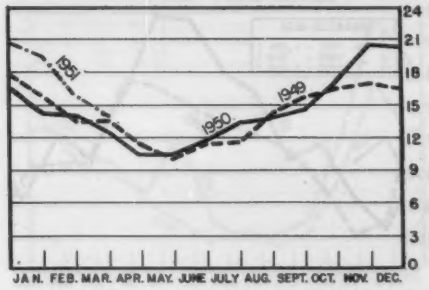
U.S. & ALASKA - FREEZINGS



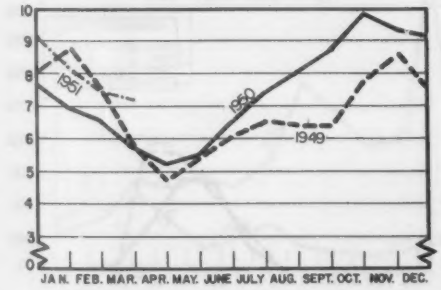
NEW ENGLAND - HOLDINGS OF FROZEN FISH



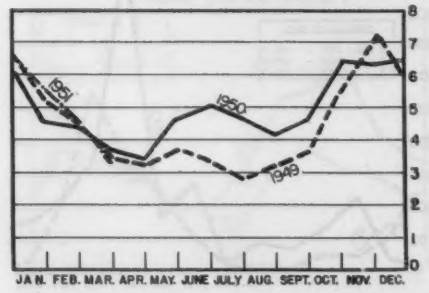
NEW YORK CITY - HOLDINGS OF FROZEN FISH



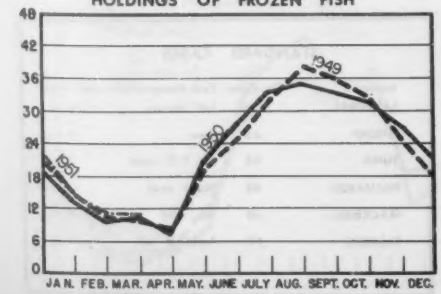
CHICAGO - HOLDINGS OF FROZEN FISH



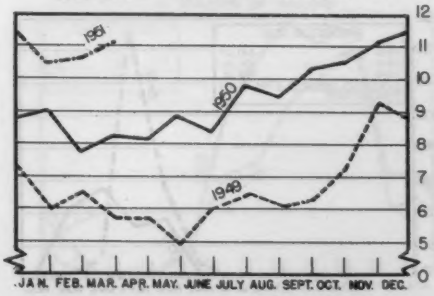
GULF - HOLDINGS OF FROZEN FISH



WASHINGTON, OREGON, AND ALASKA - HOLDINGS OF FROZEN FISH



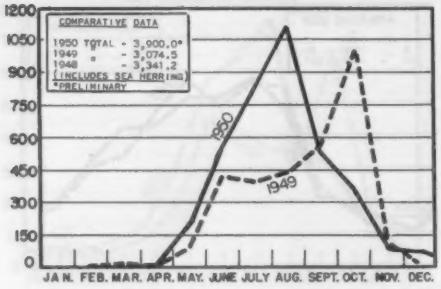
CALIFORNIA - HOLDINGS OF FROZEN FISH



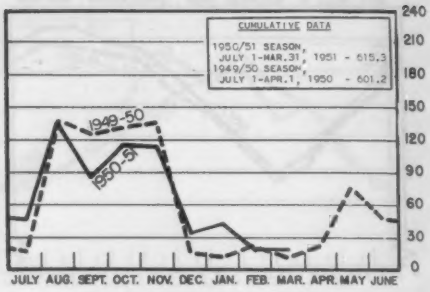
CANNED FISHERY PRODUCTS

In Thousands of Standard Cases

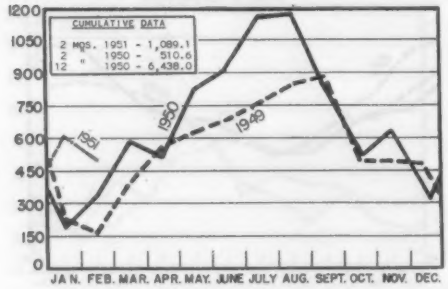
MAINE - SARDINES, ESTIMATED PACK



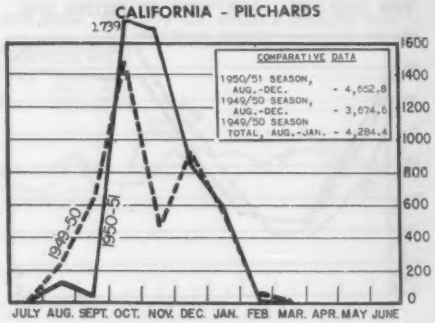
UNITED STATES - SHRIMP


CUMULATIVE DATA
1950/51 SEASON, JULY 1-MAR.31, 1951 - 615.3
1949/50 SEASON, JULY 1-APR.1, 1950 - 601.2
1949-50
1950-51
JULY AUG. SEPT. OCT. NOV. DEC. JAN. FEB. MAR. APR. MAY JUNE

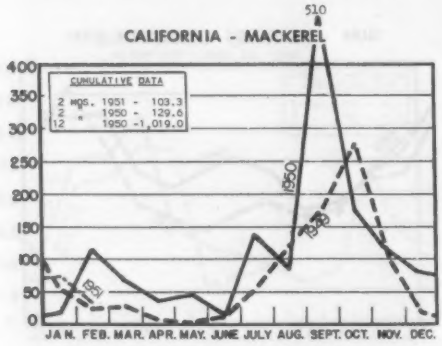
CALIFORNIA - TUNA AND TUNA-LIKE FISH



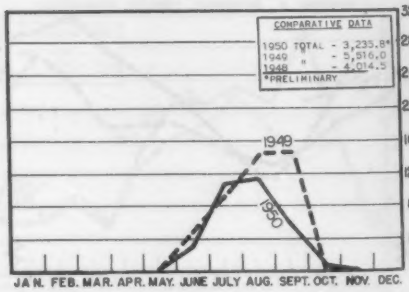
CALIFORNIA - PILCHARDS


1739
COMPARATIVE DATA
1950/51 SEASON, AUG.-DEC. - 4,652.8
1949/50 SEASON, AUG.-DEC. - 3,674.6
1949/50 SEASON TOTAL, AUG.-JAN. - 4,284.4
1949-50
1950-51
JULY AUG. SEPT. OCT. NOV. DEC. JAN. FEB. MAR. APR. MAY JUNE

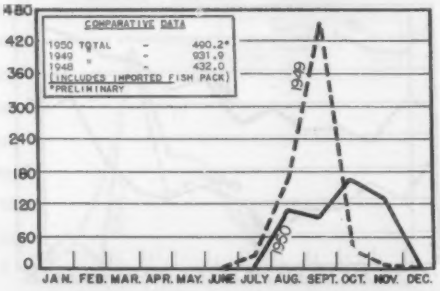
CALIFORNIA - MACKEREL



ALASKA - SALMON



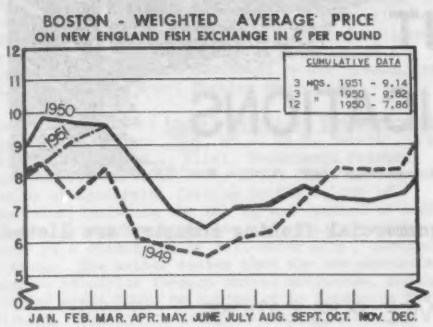
WASHINGTON - PUGET SOUND SALMON

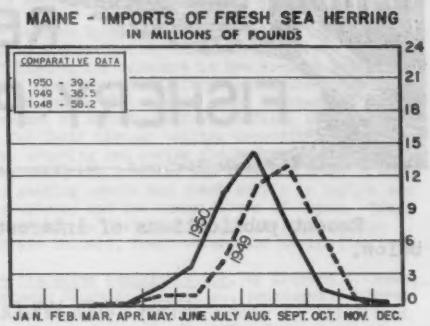


STANDARD CASES

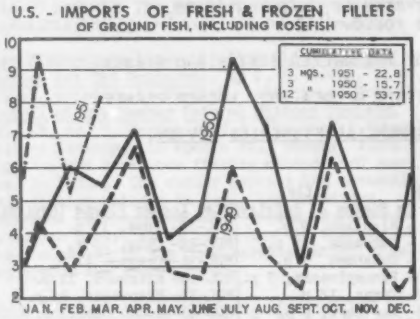
Variety	No. Cans	Can Designation	Net. Wgt.
SARDINES	100	1/4 drawn	3 1/4 oz.
SHRIMP	48	—	5 oz.
TUNA	48	No. 1/2 tuna	7 oz.
PILCHARDS	48	No. 1 oval	15 oz.
MACKEREL	48	No. 300	15 oz.
SALMON	48	1-pound tall	16 oz.

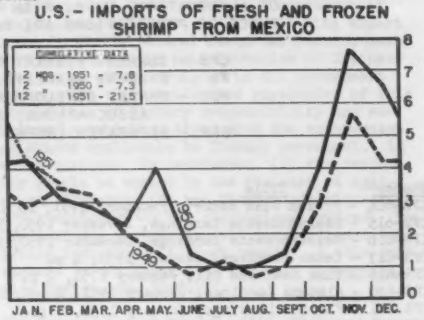
PRICES . IMPORTS and BY-PRODUCTS


BOSTON - WEIGHTED AVERAGE PRICE
ON NEW ENGLAND FISH EXCHANGE IN ¢ PER POUND
CUMULATIVE DATA
3 MOS. 1951 - 9.14
3 " 1950 - 9.82
12 " 1950 - 7.86
1950
1951
1949
JAN. FEB. MAR. APR. MAY. JUNE JULY AUG. SEPT. OCT. NOV. DEC.

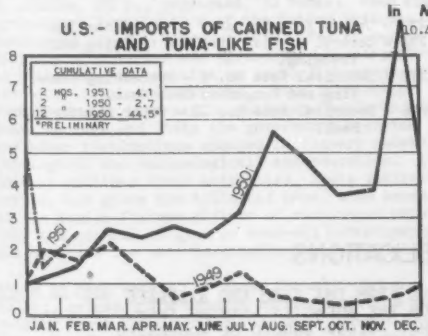

MAINE - IMPORTS OF FRESH SEA HERRING
IN MILLIONS OF POUNDS
COMPARATIVE DATA
1950 - 39.2
1949 - 36.5
1948 - 58.2
1950
1949
JAN. FEB. MAR. APR. MAY. JUNE JULY AUG. SEPT. OCT. NOV. DEC.

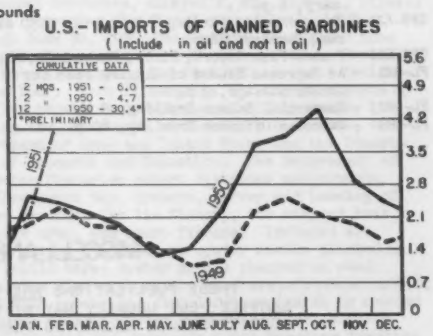
In Millions of Pounds

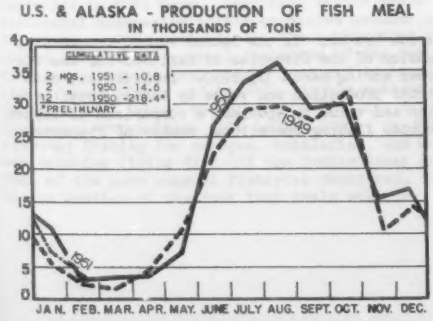

U.S. - IMPORTS OF FRESH & FROZEN FILLETS
OF GROUND FISH, INCLUDING ROSEFISH
CUMULATIVE DATA
3 MOS. 1951 - 22.8
3 " 1950 - 15.7
12 " 1950 - 53.7
1950
1949
JAN. FEB. MAR. APR. MAY. JUNE JULY AUG. SEPT. OCT. NOV. DEC.

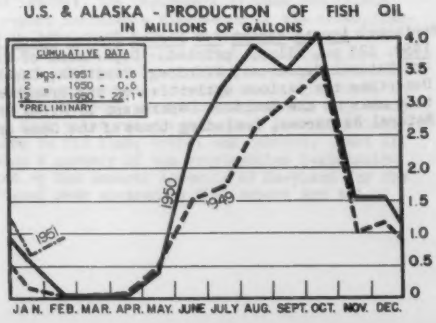

U.S. - IMPORTS OF FRESH AND FROZEN
SHRIMP FROM MEXICO
CUMULATIVE DATA
2 MOS. 1951 - 7.8
2 " 1950 - 7.3
12 " 1951 - 21.5
1951
1950
1949
JAN. FEB. MAR. APR. MAY. JUNE JULY AUG. SEPT. OCT. NOV. DEC.

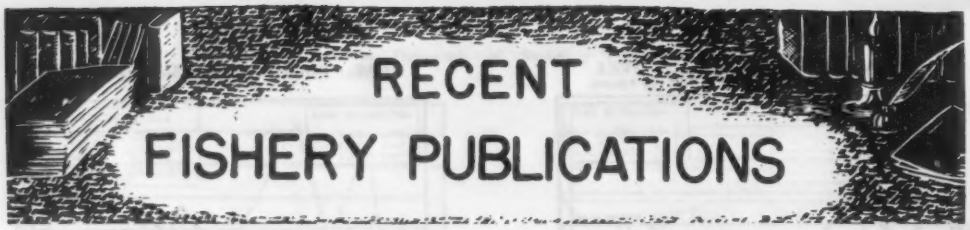
In Millions of Pounds




U.S.- IMPORTS OF CANNED SARDINES
(Include in oil and not in oil)
CUMULATIVE DATA
2 MOS. 1951 - 6.0
2 " 1950 - 4.7
12 " 1950 - 30.4*
*PRELIMINARY
1951
1950
1949
JAN. FEB. MAR. APR. MAY. JUNE JULY AUG. SEPT. OCT. NOV. DEC.


U.S. & ALASKA - PRODUCTION OF FISH MEAL
IN THOUSANDS OF TONS
CUMULATIVE DATA
2 MOS. 1951 - 10.8
2 " 1950 - 14.6
12 " 1950 -218.4*
*PRELIMINARY
1950
1949
1951
JAN. FEB. MAR. APR. MAY. JUNE JULY AUG. SEPT. OCT. NOV. DEC.


U.S. & ALASKA - PRODUCTION OF FISH OIL
IN MILLIONS OF GALLONS
CUMULATIVE DATA
2 MOS. 1951 - 1.6
2 " 1950 - 0.6
12 " 1950 - 22.1*
*PRELIMINARY
1950
1949
1951
JAN. FEB. MAR. APR. MAY. JUNE JULY AUG. SEPT. OCT. NOV. DEC.



Recent publications of interest to the commercial fishing industry are listed below.

FISH AND WILDLIFE SERVICE PUBLICATIONS

THESE PROCESSED PUBLICATIONS ARE AVAILABLE FREE FROM THE DIVISION OF INFORMATION, U. S. FISH AND WILDLIFE SERVICE, WASHINGTON 25, D. C. TYPES OF PUBLICATIONS ARE DESIGNATED AS FOLLOWS:

CFS - CURRENT FISHERY STATISTICS OF THE UNITED STATES AND ALASKA.
FL - FISHERY LEAFLETS.
MDL - MARKET DEVELOPMENT SECTION LISTS OF DEALERS, LOCKER PLANTS, ASSOCIATIONS, ETC.
SEP.- SEPARATES (REPRINTS) FROM COMMERCIAL FISHERIES REVIEW.

Number Title

CFS-614 - Frozen Fish Report, February 1951, 10 p.
CFS-615 - Massachusetts Landings, November 1950, 14 p.
CFS-616 - Massachusetts Landings, December 1950, 14 p.
CFS-617 - Texas Landings, January 1951, 4 p.
CFS-619 - Fish Meal and Oil, January 1951, 2 p.
CFS-620 - Alabama Landings, January 1951, 4 p.
CFS-621 - Florida Landings, January 1951, 4 p.
CFS-622 - Maine Landings, by months, 1950 Annual Summary, 6 p.
CFS-624 - Massachusetts Landings, by ports, 1950 Annual Summary, 18 p.
CFS-626 - Frozen Fish Report, Final, March 1951,10 p.
FL-321 - An Improved Method of Glazing Fish for Locker Storage, 3 p.
FL-387 - Commercial Salmon Trolling, 8 p.
FL-389 - Japanese Offshore Trawling, 60 p.

Number Title

Lists By States of Refrigerated Locker Plants (Revised):

MDL-2 - Michigan, 9 p.
MDL-4 - Nebraska, 12 p.
MDL-9 - Oklahoma, 7 p.
MDL-10- Pennsylvania, 7 p.
MDL-12- Texas, 12 p.
MDL-13- New York, 6 p.
MDL-16- North Dakota, 7 p.
MDL-18- Iowa, 19 p.
MDL-24- Ohio, 10 p.
MDL-31- Oregon, 11 p.
MDL-34- Missouri, 11 p.
MDL-35- Minnesota, 15 p.
MDL-43- South Carolina, 2 p.
MDL-47- Wyoming, 3 p.

Sep. 273 - Use of Echo Sounders in the Fisheries.
Sep. 274 - Control of Fish Spoilage by Icing and Freezing.
Sep. 275 - Technical Note No. 8 - Processing Canned King and Dungeness Crab Meat.
Sep. 276 - Technical Note No. 10 - Paper Bags for Fish Meal.

MISCELLANEOUS PUBLICATIONS

THESE PUBLICATIONS ARE NOT AVAILABLE FROM THE FISH AND WILDLIFE SERVICE, BUT USUALLY MAY BE OBTAINED FROM THE AGENCIES ISSUING THEM. CORRESPONDENCE REGARDING PUBLICATIONS THAT FOLLOW SHOULD BE ADDRESSED TO THE RESPECTIVE AGENCIES OR PUBLISHERS MENTIONED. DATA ON PRICES, IF READILY AVAILABLE, ARE SHOWN.

(Manitoba) Annual Report for Period Ending March 31, 1950, 133 p., illus., printed. Department of Mines and Natural Resources, Winnipeg, Manitoba, Canada. Describes the various activities of the Branches that make up the Manitoba Department of Mines and Natural Resources, including those of the Game and Fisheries Branch. In the latter report there is a discussion of the fisheries of Manitoba for the fiscal year ending March 31, 1950. Included are data on winter production and value by lakes, total production and value by species, a comparison of summer and winter fishing operations, number of fishermen

THESE PUBLICATIONS ARE NOT AVAILABLE FROM THE FISH AND WILDLIFE SERVICE, BUT USUALLY MAY BE OBTAINED FROM THE AGENCIES ISSUING THEM.

employed and equipment used, a historical table showing the production of fish for the fiscal years 1931-32 through 1949-50, and detailed information by lakes. In addition, there is a resume of the fishery investigations conducted by the Branch, and its fish culture sport fishing activities.

(Colony of Mauritius) Annual Report on the Fisheries Branch for the Year 1949, by J. De B. Baissac, 15 p., printed, 25 cents. J. Eliei, Government Printer, Port Louis, Mauritius, July 1950. This is a brief review of commercial fishing in the Colony of Mauritius, including the taking and control of such species as sharks, sardines, and mullet (rouget). There is a discussion of salt-water pond ("barachois") fishing. The author states that the sea penetrates shallow estuaries through narrow entrances, and the flooded areas could be subjected to intensive fish farming. Statistics are given for the average monthly yield per fisherman, the 1947 census of fishermen, and the monthly production during the 1946-49 period. The pamphlet concludes with the scientific and proper names of Mauritius fish.

Bombay Fishermen's Ingenuity (Age Old Methods of Capture Not Yet Outdated), by S. B. Setna, 11 p., illus., printed, in English. (Reprinted from the Journal of the Bombay Natural History Society, vol. 48, no. 3, August 1949.) The Bombay Natural History Society, 114 Apollo St., Bombay, India. Explains and describes fishing methods and gear used in India. The author refutes the contention that fishing methods in India are primitive. "The nets have been evolved after a long process of trial and error, so as to secure the maximum catch for the outlay of the considerable amount of labour employed," the author states.

Fishery Research and Educational Institutions in North and South America, by Gerald V. Howard and Eileen R. Godfrey, 85 p., processed, 50 cents. Food and Agriculture Organization of the United Nations, Washington, D. C., December 1950. The Fisheries Division of the Food and Agriculture Organization is collecting information on world fishery research and educational institutions. This publication summarizes the information gathered for North and South America and lists the government agencies and other institutions engaged in fishery research (biological and technological) and education. It briefly outlines their activities, lists publications issued, and gives the title and name, when known, of the senior fishery officer of each organization. Only the general program or over-all investigations are outlined for each institution or organization.

Fishing in Many Waters, by James Hornell, 235 p., illus., printed, The Syndics of the Cambridge University Press, Bentley House, N. W. 1, London, England (also New York, N. Y.). Some of the more unusual methods of fishing and fisheries of the world are described in this book. Beginning with a short historical discussion of the primitive methods used for fishing since early times, the author then discusses some of the unusual fisheries of the world and the methods or gear used. Included is sea-fishing off West Africa and notable fishing methods used by Negroes on inland waters. Kite fishing; shark fishing; netting hilsa (the Indian shad); poison fishing; fishing for octopus, cuttlefish, and squid; and catching flying fish off the Indian Coast are some of the more unusual fisheries described. There is one section of the book that deals with the bonito, albacore, and tunny industries of the world. In this section the author describes bonito fishing in the Maldive Islands; catching and curing bonito in Japan; bonito fishing in Polynesia; crane or "tira" fishing for albacore in the Society Islands; the tuna fisheries of California; and the European tunny and bonito fisheries. Other chapters in the book report on animals trained to fish; fish that angle for their living; baiting crocodiles and alligators; catching and curing the Bombay duck; fishing at Port Said; the greatest eel farm and trap in the World; seeking pearls and chank shells in Ceylon and Indian waters; and the women divers of Japan. Trapping devices are described in one chapter and included are deltaic, fresh-water, and marine fish traps.

Japanese Fisheries Administration, by Richard S. Croker, Preliminary Study No. 46, 55 p., processed. Natural Resources Section, Supreme Commander for the Allied Powers, Tokyo, Japan, March 1951. (Reports may be purchased only in photostat or microfilm from the Office of Technical Services, U. S. Department of Commerce, Washington 25, D. C.). A visiting expert consultant to SCAP's Natural Resources Section has completed a study of the administration of Japanese fisheries in an effort designed to aid government officials in the conservation and regulation of this resource. Lines of fishery responsibility and authority are investigated along with the enforcement of regulations applicable to fishery personnel. In his recommendations, he concludes: (1) the responsibility should be vested in the Ministry of Agriculture and Forestry; (2) the fishery administration should be reorganized and the regulations revised. The appendix includes postwar legislation pertinent to the fishing industry. (A short summary of this report appears in the March 1951 issue of Commercial Fisheries Review, pp. 32-3.)

(MARYLAND) Seventh Annual Report, 1950, Maryland Board of Natural Resources, Annapolis, Md., 207 p., illus., tables. Covering the fiscal year July 1, 1949, through June 30, 1950, this report is divided into the following parts: Part I--Introduction; Part II--Departmental Reports; and Part III--General Review of the Year. Part II contains the annual reports of the five constituent Departments of the Board, including the Department of Tidewater Fisheries, the Department of Game and Inland Fish, and the Department of Research and Education. The Department of Tidewater Fisheries report discusses enforcement, the Chesapeake Bay, oysters, survey and leasing of oyster grounds, the fin fishery, the striped bass, the blue crab, and sport fishing. Included are tables giving 1949 data on oyster shells planted on open public bars; oyster shells planted on seed areas; the blue crab catch; seed oysters transplanted; Chesapeake commercial fish landings (catch by species by gear); Atlantic Ocean commercial fish landings (catch by gear and species); total Maryland landings (catch by species); and fish net and shellfish licenses issued. The Department of Game and Inland Fish report includes a discussion of the accomplishments in Maryland's inland fisheries; inland fish conditions; and cooperative fish investigations. The Department of Research and Education report contains information on various investigations conducted, including the hydrography of the Chesapeake Bay; analysis of fish catch records and other investigations relating to fin fish; crabs; and oysters. Part III contains a summary of the conservation legislation enacted by the General Assembly of Maryland for the the fiscal year covered by this report and all

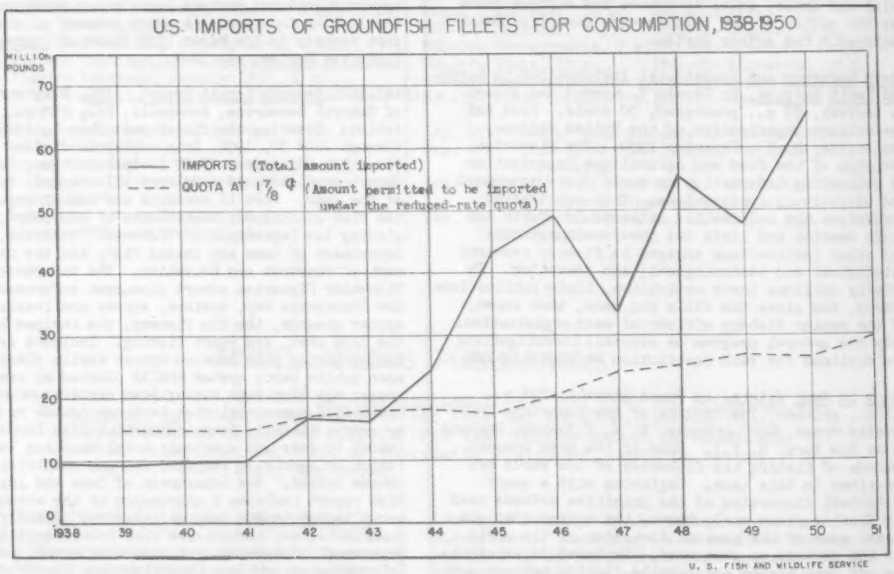
THESE PUBLICATIONS ARE NOT AVAILABLE FROM THE FISH AND WILDLIFE SERVICE, BUT USUALLY MAY BE OBTAINED FROM THE AGENCIES ISSUING THEM.

amendments to conservation laws made during the year.

Plankton Characteristics at Cronulla, New South Wales, 1943-46, by Keith Sheard, Bulletin No. 246 (Division of Fisheries - Report No. 17), 23 p., illus. Commonwealth Scientific and Industrial Research Organization, Melbourne, Australia, 1949. Reports on the general plankton characteristics, water temperature records, and pelagic fish occurrences at the Cronulla onshore station, New South Wales, for the period 1943-46. The author states that the data shows similar general annual trends with considerable variation in the detail of the pattern in each year.

Some Factors Influencing the Trends of Salmon Populations in Oregon, by Donald L. McKernan, Donald R. Johnson, and John I. Hodges, Contribution No. 12, 23 p., illus., printed. Oregon Fish Commission, Portland, Oregon, December 1950. (Reprinted from Transactions of the Fifteenth North American Wildlife Conference, Wildlife Management Institute, Washington, D. C., 1950.) Discusses the trend of salmon populations in Oregon, possible causes of observed fluctuations and decline, and relationship between fishing and population trends.

Striped Bass Studies on Coos Bay, Oregon, in 1949 and 1950, by Alfred R. Morgan and Arthur R. Gerlach, Contribution No. 14, 31 p., illus., printed. Oregon Fish Commission, Portland, Oregon, December 1950. This is a report to the Forty-Sixth Legislature of the State of Oregon in fulfillment of the directive of the Forty-Fifth Legislative Assembly to the State Fish Commission and the State Game Commission to jointly conduct a study of the striped bass of the Coos Bay area. It discusses the area's striped bass sport fishery; the commercial fishery (history, commercial gear, fishing areas, relationship to shad fishery, catch per unit of effort, rate of fishing and estimate of population size, and average weight studies); the life history of the striped bass; and conditions affecting survival. Included is an economic evaluation of the striped bass sport and commercial fishery and recommendations. The authors report that there is no evidence of a decline in the striped bass population in Coos Bay.



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AN IMPROVED METHOD OF GLAZING FISH FOR LOCKER STORAGE

The glazing of fish by the usual method when prepared for storage in locker plants has been reported to be very expensive from the standpoint of both time and labor. A method has been suggested by a West Coast locker-plant operator which overcomes this extra handling and inconvenience. The results of tests using this suggested method conducted at the Branch of Commercial Fisheries' Fishery Technological Laboratory at College Park, Maryland, are discussed in Fishery Leaflet 321, An Improved Method of Glazing Fish for Locker Storage.

IMMERSING UNFROZEN FISH WRAPPED IN VEGETABLE PARCHMENT IN COLD WATER FOR A FEW SECONDS IN A SERVICE LABORATORY PRIOR TO WRAPPING IN MOISTURE-VAPOR-PROOF MATERIAL AND FREEZING.

Using the improved method, the unfrozen fish are first wrapped in vegetable parchment, soaked in cold water for a few seconds, immediately wrapped in moisture-vapor-proof material, and then frozen. It was claimed that much of the water is retained within the package which upon freezing forms a rather heavy glaze around the fish.

Although the tests conducted were limited in scope, the author reports that a definite advantage in maintaining quality and reducing handling are the attributes of this improved method of glazing fish. This method of preparation would appear to be particularly adapted to locker plants and home freezers for fish that are small enough to be readily packaged. Under certain conditions, it may also be applicable to storage in warehouses, according to the author.

Copies of Fishery Leaflet 321 are available free upon request from the Division of Information, U. S. Fish and Wildlife Service, Washington 25, D. C.

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